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SOLID TIRES NOT DOOMED.

PNEUMATIC TIRES have become so important of late that some are predicting the passing of solid tires.

The success of cord tire construction and the country's sudden need of rapid freight and express transit have created an abnormal situation. The experience gained has been of much value to tire and truck manufacturers, and to the country. It has shown both the possibilities and the limitations of pneumatic truck tires, but does not show that pneumatics will supplant solids. There is need for both, and both will continue and increase.

The threat of the pneumatic has already served to stimulate development in design, compounds, treads and rims, so that the solid tire is steadily growing better. Where speed or the protection of fragile merchandise is the important factor, the giant pneumatic solves the problem, but where very large and heavy loads of goods not readily damaged can travel more slowly the solid tire answers the purpose and gives longer service at lower cost and with less trouble on the road. Tires must be chosen with respect to the service they will be called upon to render.

The pneumatic is ahead in the race at this moment, but solids and semi-solids are not by any means out of the running.

AMERICAN PLANTATION RUBBER.

VERY LARGE AREAS in the American Southwest will sooner or later be given over to the culture of rubber-producing plants, in the opinion of Dr. Herbert J. Webber, who is recognized as being the foremost plant breeder in the United States. He is also confident that the *Chrysothamnus* could be made to yield 15 or 20 per cent of rubber after improvement through breeding and selection. This, of course, does not mean that *Chrysothamnus* is the best plant for cultivation in the Southwest, but that it is one of the sorts which should be given a trial. In any event, it seems desirable that the rubber investigations being conducted by the botanists of the University of California should be carried through to a definite conclusion.

THE GOODYEAR VULCANIZATION "ACCIDENT."

SO MANY WRITERS describe the discovery of vulcanization in a variety of ways that the true story should be published and emphasized, this for the sake of historical accuracy.

In the first place a "spoonful" of mixture of rubber and sulphur did not accidentally fall on a hot stove, flatten out and become vulcanized. It couldn't. Goodyear's solvent was spirits of turpentine. A mixture, fluid enough to "spoon," falling on a hot stove would bubble, foam and probably burst into flame. At all events the result, spongy, brittle, charred, would not suggest vulcanized rubber.

Nor did a team load of coats on their way from Woburn to Boston catch fire and a charred fragment point the way to the great discovery.

The truth is this: Goodyear was trying to incorporate some sort of dryer in rubber that would permanently prevent rubber clothing from becoming sticky. It was easy to make goods that were free from tackiness for a week or two, but they soon softened and became valueless.

One of his hundreds of experiments was a combination of rubber, sulphur and white lead, dissolved in spirits of turpentine. This was spread with a broad bladed knife on several pieces of cloth. To hasten the evaporation of the solvent he hung the pieces near a stove. One, through accident, rested against the hot iron and turned black, while the others were of a grayish white color. Disgusted at his carelessness Goodyear took the black sample and was about to throw it away when its curious texture halted him. He examined it carefully and recognized what he termed the "change" and which Brockedon later happily termed vulcanization.

This is the story related by men who knew Goodyear, who were rubber men and knew the beginnings of the business. Emory Rider, John Murphy, A. Schlessinger, Henry G. Tyer, Daniel Hayward, J. B. Forsyth, all

pioneers and all in a position to know, in talking with the editor of this journal, agreed as to the main particulars given above.

DANGEROUS DEMANDS OF LABOR.

TO A PROPOSAL made by labor interests for the incorporation in the Illinois State Constitution of an article declaring that the right of labor to organize and conduct collective bargaining should not be abridged, and that courts should be debarred from issuing injunctions in restraint of strikes and to check their promotion. Charles Piez, president and treasurer of the Link-Belt Company of Chicago, and whose valuable service at the head of the United States Emergency Fleet Corporation is well remembered, interposed a forceful objection in speaking for the Illinois Manufacturers' Association recently at the State Constitutional Convention.

The argument was advanced that the sole purpose of a constitution should be to define the principles governing and the guarantees given all the people of a commonwealth, and it can not justly single out any class or group for special favor; nor should any law-making power or tribunal of justice be inhibited from dealing with abuses of which any class or group may be guilty against the common weal, for the interests of the whole state must always transcend those of any class, be they laborers, capitalists, or members of any other group. Answering the claim that labor has been regarded as property rather than an attribute of life, Mr. Piez cited considerable legislation recently enacted, with the aid of employers, to lessen working time, to make mines and factories safer and more sanitary, to set a fair minimum wage, for accident relief, to lighten women's labor, and to check child employment. Nor has any law been passed to deter workmen from associating for any peaceful purpose.

Particularly did Mr. Piez object to the incorporation in the basic law of the state of an article giving organized labor such an unfair and unwarranted advantage over employers as to compel the latter to submit to dealing only with representatives of a trade union instead of with individual employes. To make such a concession, he implied, would be to strike a blow at the foundations of industrial liberty. In return, it would provide no restrictions to safeguard public interests and impose no collective responsibility on labor organizations in carrying out wage or time bargains, just as now practically no redress is afforded an employer whose property is damaged by strikers. If capital is to be held to account, labor cannot escape its obligations while insisting on its rights. The speaker, while freely conceding the privilege of employes to quit work, contented that, at least, the quitters should not be allowed to coerce others "to refrain from work, with a bludgeon, or through the more cruel and effective method of intimidating their wives and children."

The regret is that the sane views of such broad-gage, experienced observers as Mr. Piez are not given wide publicity in the daily press. Indeed, upon the press rests the obligation to discuss these and kindred questions in a generous, judicial spirit, to point out clearly the close interrelation of capital and labor, and, recalling the Æsopian fable of the quarrel of the body and its members, to emphasize how dependent one is on the other, to stress the need of coordination.

Many great newspapers are strangely reluctant about discussing frankly the onerous exactions of some labor unions and their retardation of output, which makes goods scarce and dear. Their silence strengthens the impression that they either fear labor or cater to it for an ulterior purpose. Some are so anxious to win mass circulation that they not only gloss over or ignore the most palpable delinquencies of unionism, but they even stir up class hatred by affecting to defend the most irrational demands of labor; that is, so long as such demands do not affect the interests of those "welfare of the masses" journals.

TRUCK TRAINS AND TIRES.

IN the motor truck road train may be found a solution of the freight transportation problem of the near future. This train consists of one large truck drawing two or more trailers of special design. The trailers are equipped with airbrakes and a steering mechanism assuring perfect tracking, the whole being controlled from the driver's seat. Longer trains can be handled quite as easily.

This method means greatly increased load capacity at the minimum cost of operation in initial investment, fuel consumption, repairs and labor, only one man being required to drive. Such a train has all the mobility, speed and flexibility of operation typical of ordinary truck hauling, and it congests the road less than would three motor trucks operating independently.

Motor truck road trains have been extensively used abroad, but for the most part with iron or solid rubber-tired wheels which have rendered them slow going. The giant cord pneumatic developed in America, however, should add speed to their great carrying capacity and multiply the use of this newest type of rubber tire.

NOT SPECIFICALLY OF THE UNITED STATES BUT OF the whole world, Akron stands as the real "Rubber City." No other city, county, or state in our Union approaches it in rubber factories, number of employes, and product. Only two foreign countries exceed it in production of rubber goods.

The last census shows that with a population of 208,435 persons, an increase of 139,368 during the last decade, Akron's rate of growth has been 201.8 per cent. Due chiefly to the remarkable expansion of its rubber business it now ranks next to St. Paul, Minnesota, in the list of great American cities.

A Modern Tire Plant Layout.

By M. A. Pearson.[1]

IN PLANNING a modern tire factory there are many problems to be considered that involve the best engineering practice combined with practical knowledge of tire building. There is also a great difference of opinion on important points as to the method of manufacture and also the lay-out of a modern tire factory.

Large modern plants have three to six-story building units and, to accommodate their phenomenal growth of the past few years, changes in the location of departments have been frequent. One of the first companies to manufacture pneumatic tires is now erecting a large plant at Buffalo on the one floor plan. This method, of course, is very practical but a considerable area of land is required to build a plant on this plan for large production. A smaller plant will produce much better results in a building about 80 feet wide, 280 to 300 feet long and two to three stories high. If the machines required for the manufacture of pneumatic tires and tubes are laid out properly the maximum production can be reached and there will be very little lost motion throughout the entire plant. A material saving can be effected, moreover, by the use of gravity.

(Designed by E. Raymond Throsby.)

PERSPECTIVE VIEW OF A MODERN TIRE PLANT.

LOCATION.

The plant should be located close to ample water supply and economical electric current should be available. The water should be analyzed to discover if it has any undesirable properties. It is also desirable to locate the plant near the railroad, so that a siding can be obtained as well as advertising to the traveling public.

In many instances an ample water supply is not available when all other points that have to be considered in the location, such as transportation facilities, etc., are met with. In such cases there can be installed what is known as a spray or cooling pond, connected to the city mains and the water cooled and used over again.

POWER, HEAT, AND LIGHT.

It is generally found to be more economical to buy electric power, the higher voltages being stepped down by transformers which should be placed in a fire-proof building. Alternating current is satisfactory for all purposes except calenders where two-voltage direct current is necessary to give a 4 to 1 speed range. The same applies to tubing machines for which variable speeds are preferable, where direct drives are applied.

To secure this direct current a motor generator set or rotary converter is necessary. The rotary converter is more economical and efficient but more difficult to repair under ordinary conditions.

Other power house equipment includes boilers of sufficient capacity to supply steam for heater presses, vulcanizers, mills, calenders, dryers, pumps and heating.

The lighting required is a good industrial lighting unit with the exception of around the calenders, where a special unit is required so that there will be sufficient light both in front and back of the calenders. The lighting unit for the plant as outlined is one light to a bay, the bays being 20 feet square.

FIRST FLOOR.

WASHING ROOM.

For a daily production of 450 tires using 25 per cent of wild rubber, two 16 by 36-inch cracker-washers can wash the rubber in six hours. The initial washer installation should consist of one 16 by 36-inch machine with a 75-h.-p. drive suitable for a future cracker-washer of the same size. A soaking vat, cutting machine, and drying apparatus will complete the washing room equipment.

MILL AND CALENDER ROOM.

The mill line should consist of a unit of three 22 and 20 by 50-inch mills with a 250-h.-p. drive. Mill No. 1 to be used for breaking down and mixing. Mill No. 2 for mixing and mill No. 3 for mixing and warming up the calender stock. A mixer located next to the mill unit can be used to advantage in preparing rubber for the mills.

The calender should be not less than a 24 by 66-inch 3-roll machine with a 100-h.-p. drive. The delivery speed ranges from 10 to 40 yards per minute for which a 100-h.-p. direct current, two-voltage variable-speed motor is used.

Additional equipment includes fabric dryer, tube machines for beads and treads, cooling tables, stock bins, sifting machines, etc. Endless cable bead wire has met with almost universal success and can be purchased in the various sizes. A machine has been developed that should be installed for insulating the bead wire.

The fabric dryer is a three-roll reversible machine operated from one side and requires very little floor space. This should be located at the rear of the calender. One 3-inch tubing machine with a 7½-h.-p. alternating-current motor drive easily cares for all bead requirements. A 6-inch tubing machine will provide enough treads for all sizes up to and including 6-inch. A 25-h.-p. variable-speed direct-current motor is used.

HYDRAULIC PLANT.

The accumulators, pumps and air compressors are located in the main building adjacent to the heater presses.

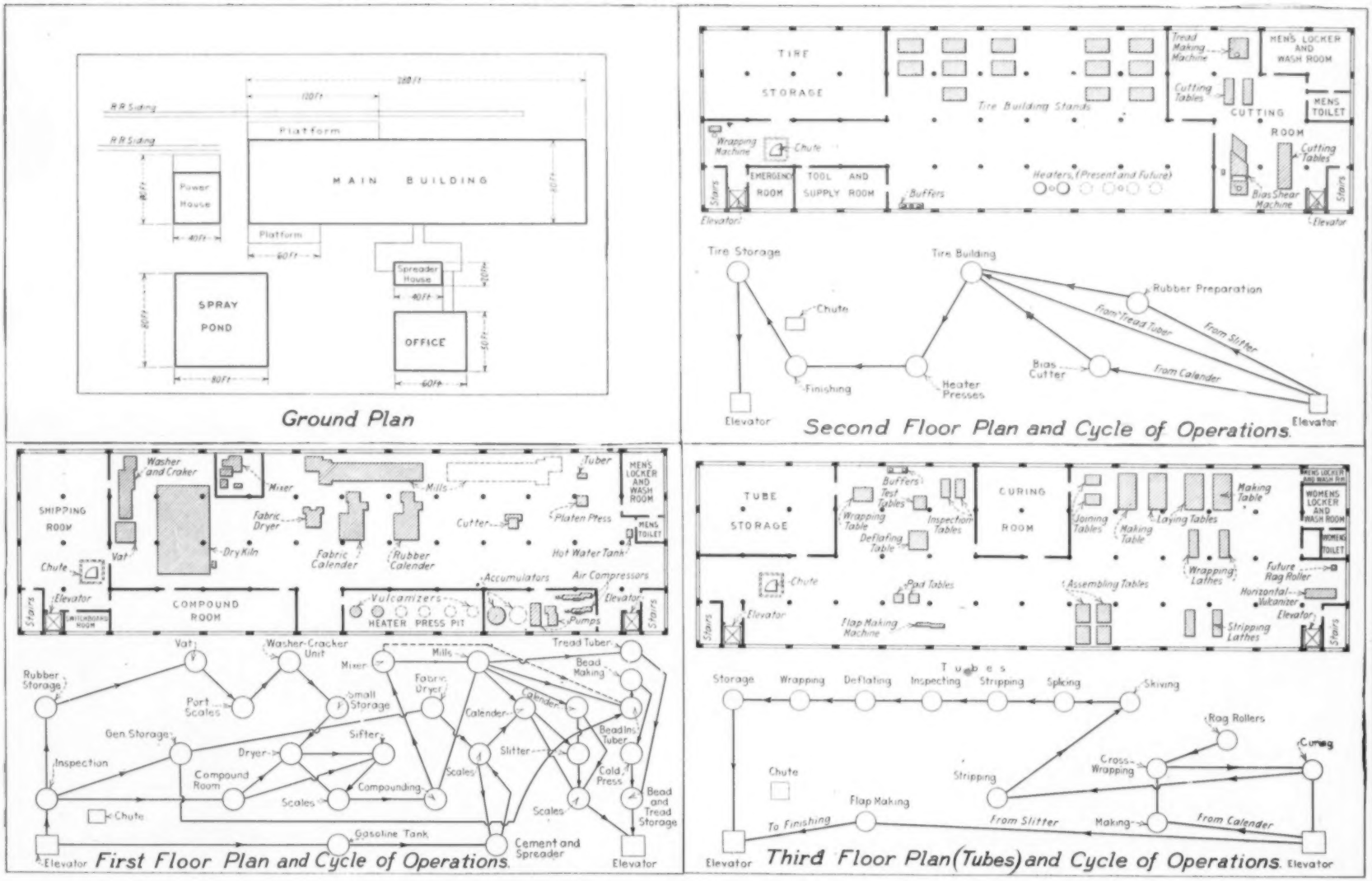
SPREADER BUILDING.

The spreading or impregnating of fabric must be done in an absolutely fire-proof building. The cement-mixing room must also be separated from the spreader room by a fire wall. Equipment for this department should include churns and impregnating machines.

SECOND FLOOR.

The second floor is devoted entirely to building, curing, and finishing casings. The necessary equipment will include one bias-cutting machine, heater presses, tire-building stands, cores, molds, tables, etc.

[1] Engineer in charge of eastern and export sales for the Allen Machine Co., Erie, Pennsylvania.



PLANS AND CYCLES OF OPERATION OF A MODERN TIRE AND TUBE PLANT.

MOLD AND CORE EQUIPMENT.

This equipment is of great importance. In designing a non-skid tread considerable expense can be saved by using a design which will eliminate, as far as possible, all hand work in connection with the manufacture of the mold. This can often be done without affecting the qualities of the non-skid design. Collapsible cores are used, and as air bags are necessary for curing cord tires a complete mold equipment for their manufacture should be installed. Additional equipment will include base rings for molds, bead placing rings and bead molds.

EMERGENCY ROOM.

The emergency or hospital room is located on this floor, adjacent to the elevator. While the more serious accidents occur in the mill and calender room on the main floor, minor accidents are more frequent on the second and third floors. This room should be sanitary, and in fact a miniature hospital completely equipped and managed by a competent physician.

THIRD FLOOR.

The third floor is devoted entirely to tubes. The tube vulcanizer should be equipped with extra inside carriages and transfer carriages to secure full production. Wrapping and stripping lathes, skiving machines, nut tighteners, flap machines and deflating machines are all necessary equipment. Building tables and splicing equipment, where the acid cure is used, can be built at the plant.

The plant here outlined provides for an initial capacity of 500 casings and tubes per day and is designed for an ultimate capacity of 2000 tires a day without any material changes in the building. Additional equipment and three shifts will be necessary to reach this production.

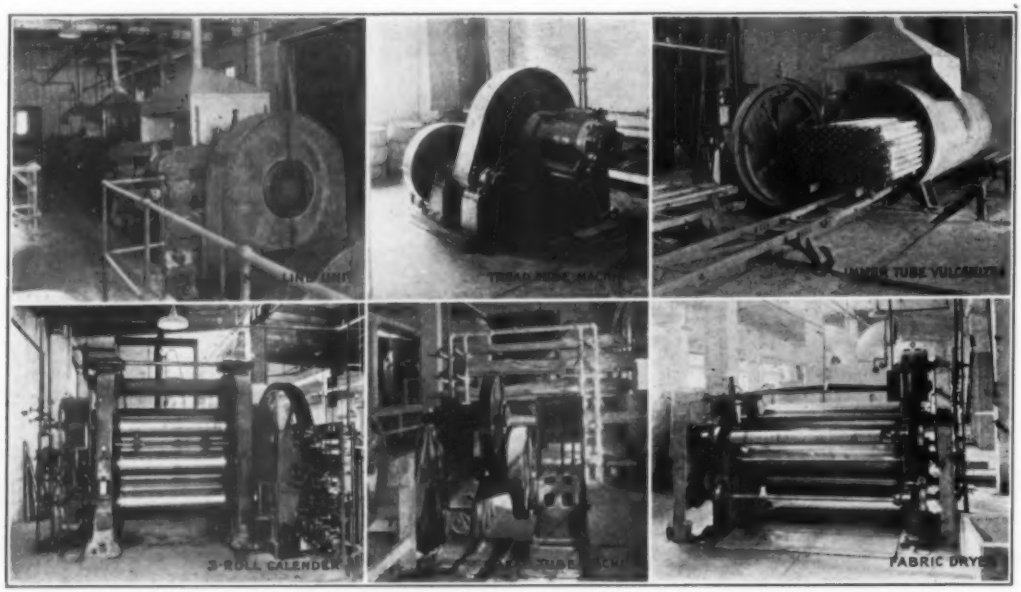
Below are outlined the various operations from the receiving to the shipping room, showing the machinery, connections and small tools required for each operation, and followed by pertinent remarks.

Operation.	Machinery.	Connections.	Small Tools.	Remarks.
Receiving room.	1 dormant scale, 1,000 pounds capacity.	.....	Saw, hatchet, hammer, cold chisel hand hooks, crow bars, hand trucks.	The scale is required to weigh all material received by the factory.
Inspection table.	.....	.....	.....	All material received should be inspected before entering the factory.
Compound room.	.....	.....	.....	Fairly large room. Uniform temperature should be kept at all times.
Rubber storage.	.....	.....	.....	Located in the basement. Should be cool and protected from the sun.
General fabric storage.	.....	.....	.....	An inspecting machine should be installed which would also measure fabric so that claims could be made in case of shortages.
Fabric drying.	3-roll reversible fabric dryer.	Steam.	.....	.....
Cement and spreader.	Battery of three 200-gallon churns and 16-foot spreader or impregnating machine with double coil.	.....	Gas can, cement cans, scoop pans, knife, scissors, castor-truck.	This should be in a separate building, absolutely fireproof, divided by fire-wall. The equipment should not be direct-drive type on account of the fire hazard. A motor is located in a small pent house to operate both churns and spreader by belt drive.
Gas storage.	1,000-gallon tank, also pump.	.....	Gas cans, funnels.	.....
Vat.	Poured concrete, waterproofed, made in any desirable shape.	Steam and water.	.....	For soaking rubber.
Weighing.	Portable platform scales.	.....	.....	.....
Cracker and washer.	Two 16 by 36-inch cracker-washers direct 75-h.-p. drive.	Steam and water.	.....	This operation is very important as it is imperative that certain grades of rubber should be sheeted as finely as possible to eliminate all foreign matters.
Small storage.	.....	.....	.....	Rubber is stored and placed on racks before going to the drying room.
Drying.	Dry kiln.	Steam and water.	Baskets and wheel truck.	.....
Sifting.	Sifters.	.....	Compound pans.	Sifting pigments is a very important operation. It is also desirable to dry pigments especially when received in bags instead of barrels. Some pigments collect moisture rapidly.
Weighing.	Three table scales.	.....	.....	.....
Compounding.	Long table racks.	.....	Wheel trucks, knives, scoops, scissors, compound pans, small pans.	.....
Mixing.	Mixer (enclosed.)	Steam and water.	Wheel truck and compound pans.	.....
Milling and warming.	1 unit of three 22 by 20 by 60-inch mills direct 250 h.-p. drive.	Steam and water.	Mill knives, butcher knives.	Mill No. 1 to be used for breaking down and mixing. Mill No. 2 for mixing and mill No. 3 for mixing and warming up stock for calender.
Frictioning, etc.	1—24 by 66-inch, 3-roll calender, 100 h.-p. direct drive. The delivery speed ranges from 10 to 40 yards per minute.	Steam and water.	Knives, scissors, 2 hand trucks with cradles, 2 cradle trucks.	.....
Weighing.	Portable platform scales.	.....	.....	.....
Cutting and slitting.	Cutting and slitting machine, direct 5-h.-p. drive.	.....	Knives, scissors, truck.	The machine is used for cutting stock for tubes, side walls, cushions, etc., for tires.
Weighing.	Portable scale.	.....	.....	.....
Fabric cutting.	Bias cutter, cutting tables, stock racks, liner cleaners, liner wind-up.	.....	Books, liners, knives, stitchers, scissors, etc.	.....
Rubber preparation.	Tables.	.....	.....	.....
Tread making.	6-inch tuber, 25-h.-p. direct drive.	Water and steam.	Books, scrap boxes, scrap truck.	.....
Bead making.	Cold press with hot platen.	Water and steam.	.....	.....
Insulating.	3-inch direct-drive tubing machine.	Gas, water and steam.	.....	.....
Bead making.	Bead machine, stand for bead reels, table, bead-covering device.	.....	Scissors, knives, rack for reels.	.....
Bead storage.	Bead drums, racks.	.....	.....	.....
Tire building.	Building stands, cores, stock racks, stripping table, tool boxes, stand for finished tires. Four jacks.	.....	Rollers, stitchers, knives, scissors, etc. Gas cans, cement cans, wrenches, hammer, scrap boxes, core racks, base rings, racks, wheel truck.	.....
Vulcanizing.	Heater presses, 2 accumulators, temperature controller stand for molds, overhead trolley.	Air, steam, and water.	Wrenches, cracking bars, stripping bars, soapstone can, brushes, etc., molds, rings, etc.	.....
Finishing tires.	Buffing, painting, wrapping, trimming.	Air.	Swabs, brushes, knives, hand trucks, scissors, etc.	.....

Operation.	Machinery.	Connections.	Small Tools.	Remarks.
Tire and tube storage.	Storage racks, scales.	.....	.....	This room is located on the second floor directly above the shipping room. All windows are painted a dark color so that a cool, uniform temperature may be maintained at all times.
Tube making.	Poles, stock racks, pole storage, cross stands, making tables, pad table.	.....	Die for cutting pads, knives, scissors, rollers, stitchers.	.....
Cross wrapping.	Wrapping machine, 3-h.-p. direct drive.	.....	.....	.....
Tube curing.	Horizontal vulcanizer, temperature controller.	Steam, air, and water.	.....	.....
Tube stripping.	Stripping lathe.	Air.	.....	.....
Tube buffing.	1 skiving machine, valve inserter, nut tighteners direct drive, fractional h.-p. required.	.....	Gage for joint.	.....
Tube splicing.	Splicing mandrels, splicing stands.	Air.	Acid cans, brushes, etc.	.....
Tube stripping.	Portable racks.	.....	.....	.....
Inspecting.	Tank.	Water and air.	.....	.....
Deflating.	Deflating machine, vacuum pump.	.....	.....	.....
Wrapping.	Table.	.....	.....	Tube wrapping for shipping.
Flap making.	Flap machine, flap molds, tables.	.....	Jack, scissors, knives, dies, etc.	.....
Rag rolling.	Rag roller, direct 1-h.-p. drive.	Water.	.....	Works in conjunction with stripping lathes.
General stock room, 2nd floor.	Racks, bins, tables, scales.	.....	.....	.....

PROGRESS OF FABRIC.

As soon as the fabric is received it should be inspected and tested to see if it meets with specifications. After inspection the fabric is placed in general storage; from thence it is taken to the fabric dryer to eliminate all moisture. After the drying operation the cord fabric should be weighed before sending to the spreading room and it should also be weighed after the spreading operation. The fabric is taken from the fabric dryer to the calender, and impregnated fabric is also sent direct from the spreading room to the calenders. After the calender operation the fabric is sent to the cutting and slitting machines to be cut into proper sizes for building of tires.



INTERIOR VIEWS IN A MODERN TIRE AND TUBE PLANT.

ROUTING OF RUBBER.

The rubber after being inspected and weighed is stored in the basement, which provides a cool, dry place. As needed it is taken to the washing room. It is not the practice of some manufacturers to wash plantation rubber, as they claim that washing and subsequent drying weakens the rubber. However, if it is not thoroughly washed there is the chance that some foreign matter or fermentation will remain in the rubber, eventually causing trouble. Constantly improving methods of handling plantation rubber may possibly in the future eliminate the washing operation.

When the rubber has been broken down and finally sheeted, it is placed in storage until it is ready for the dryer. From the dryer it goes to the scales—and from there to the compound room, where it is apportioned to the various compounds and sent to the mixer or breaking down and mixing mills. From mixing and warming mills the stock is sent to the calenders and to the tube machines. From the calenders the sheeted stock is delivered to the slitting machines for preparation for tubes while the frictioned fabric goes to the slitting machines and cutting tables.

IN CONCLUSION.

From the above it will be noted that the first operation starts in the basement of the building and the final operation ends there. This department is used for both receiving and shipping. It will also be noted that the majority of the operations are performed on the first floor and located in the most suitable place to allow for expansion at any time, that is, installing additional mill lines, calenders, etc.

It will also be noted that all materials move in one direction on the first floor and on the second and third floors they move in the opposite direction so that the finished materials will arrive directly above the shipping and receiving room. An elevator and chute are located at this end so that all materials can be easily handled.

The repair and maintenance department is located in the basement. A laboratory for testing and experimenting is almost a necessity and can be located on the second floor or adjacent to the factory superintendent's office.

Equipment for these two departments will vary depending on the amount of work of this character that it is desirable to accomplish in the initial unit.

MORE ABOUT JAR RINGS AND POISONED OLIVES.

THE article on jar rings and poisoned olives that was published in THE INDIA RUBBER WORLD, May 1, 1920, elicited the following comments from prominent manufacturers of rubber jar rings.

BOSTON WOVEN HOSE & RUBBER CO.

The Bureau of Chemistry of the Department of Agriculture authorizes the statement that it has met with a gratifying degree of cooperation on the part of packers of ripe olives in improving methods to such an extent that danger from botulinus poisoning in future packs will be eliminated. Five groups of deaths traced to poison produced by the organism known as bacillus botulinus have occurred in New York City, Detroit, Michigan, Canton, Ohio, Memphis, Tennessee, and Kalispell, Montana. All of these cases were due to the consumption of ripe olives. No fatalities have been traced to green olives.

Very extensive investigations have been made by scientists from the Bureau of Chemistry with the cooperation of the packers and the packers also have employed specialists to study the causes of botulinus poisoning and the precautions which should be employed to prevent further difficulty. The experts agree that the trouble is not inherent in the type of container used. Whether the olives be packed in glass jars or in tin cans, they may be rendered absolutely safe if proper precautions are taken to prevent the infection with bacteria during handling and if the packages when filled are sterilized at a sufficient temperature and for a sufficient period of time. It is entirely practicable, say the specialists, to sterilize both glass containers and tin cans at a temperature high enough to insure absolute sterilization.

Unfortunately some packs of ripe olives put up in glass as well as some in tin during past seasons were not prepared with all the precautions now known to be essential and were not sterilized at a sufficiently high temperature and some of these goods in glass were responsible for the fatalities. It is probable that of all the ripe olives on the market but an extremely small number actually contained botulinus. Of more than 2,000 individual packages collected and examined in the Bureau of Chemistry but eight were found to contain botulinus, and seven of these were from the output of one manufacturer and from one batch of his output. In addition to these eight, the bureau has examined samples of some of the olives responsible for the fatalities and has also found botulinus in these specimens.

Since there is a possibility of danger from any ripe olive which has been insufficiently sterilized the Bureau of Chemistry has suggested to the industry that all ripe olives in glass or in tin wherever located be carefully inspected and that any which show the slightest degree of decomposition be destroyed. It has further suggested that all ripe olives which have not been processed at a sufficiently high temperature be returned to the packers for immediate reprocessing at a sufficient temperature to insure complete sterilization.

With few exceptions the olive packers have most heartily fallen in with all suggestions made in the interest of the public safety and by mutual agreement entered into by practically all of the packers they are now taking steps to withdraw from the market all ripe olives in glass containers which have not been sterilized at a sufficient temperature. Similar steps are being taken by some of the packers in the case of minced olive relishes in view of the fact that one death due to the consumption of such a product has been reported.

While concerted action to remove ripe olives packed in tin and processed at a low temperature has not been taken by the packers, the fact that spoilage in tin has so consistently resulted in making a "swell" out of the can constitutes a warning to the purchaser which is not often disregarded. There is no reason to anticipate danger from properly packed and processed ripe olives, whether they be packed in tin or glass containers.

THE MANHATTAN RUBBER MANUFACTURING CO.

In an article that appeared in the "Literary Digest" of May 1, it was claimed that ripe olive poisoning was an infection from the botulinus germ present in the rubber rings used on the glass jars.

While we are not an authority on germs and would not recognize the botulinus if we met him face to face, we do feel that we are perfectly competent to refute the statement that this or any other germ can exist in a rubber jar ring. If rubber goods are subject to infection, and we certainly do not believe they are, it is high time that we took a trip around to the various hospitals and insisted upon their giving up the use of surgical rubber gloves, rubber tubing, sheeting, and many other rubber articles which they use; and where is there any line of work in which more care is needed for cleanliness and sterilization than in a hospital? In fact, life often depends upon the sterility of a piece of rubber goods.

In the manufacture of a rubber jar ring there is about as much chance for the germ to exist as there is for the proverbial snowball. The rubber which is used in jar rings is first very carefully washed with hot water to free it from all foreign particles. It is then mixed with chemically pure materials, one of them being sulphur. The sulphur, itself a very good disinfectant, is present in all rubber goods, and acts as an excellent germicidal agent. A careful examination of a piece of rubber goods will reveal a grayish substance that completely covers the surface of the article. Sometimes this condition is more noticeable than at others, but it is always present. It is caused by an efflorescence of sulphur and is known in the rubber trade as "bloom." This covering of sulphur serves as a very efficient protection against any germs. During the process of manufacture, the rings must go through a heating process in live steam for about two hours at about 290 degrees F. Therefore, it would be rather a hardy germ that would be able to live through such a process as this. In fact, we doubt if the germ has been discovered that would stand this particular treatment. The rings are then packed in sanitary and carefully sealed boxes, and are ready for the consumer. To our mind it is absurd that any germ, even the botulinus, could exist in a rubber jar ring after it has been through the regular manufacturing process.

A RUBBER COLD-WATER BOTTLE.

One of the manufacturers of rubber goods recommends filling its "Black Beauty" hot-water bottle with cold water for use in keeping cool in summer. This bottle has the special "C-Kure-Neck," described in THE INDIA RUBBER WORLD, March 1, 1918. (The Miller Rubber Co., Akron, Ohio.)

Tire Fabric and Long-Staple Cotton.

By L. W. Alwyn-Schmidt, Consulting Economist.

IT HAS BEEN ESTIMATED that 50,000,000 tires will be required during the present year and that 60,000,000 at least will be needed to cover the requirements of 1921. On the basis of this consumption the American tire industry will need approximately 315,000,000 pounds of tire fabric, which to produce will consume nearly 400,000,000 pounds of cotton. Experts say that the available supply of long-staple cotton will hardly be sufficient to cover this year's demand and will fall 70,000,000 pounds behind requirements during the coming year. Who will doubt, then, that the fabric situation is to-day one of the most important problems of the automobile tire industry?

It seems paradoxical that such a situation should occur in the United States, the largest cotton-producing country of the world. But the fact cannot be denied, and at the present time no other remedy can be found than to acquire as much of the foreign long-staple cotton as may be induced to come to our market. The boll weevil and the indolence of our cotton growers are both to be blamed for this situation. Having had a practical monopoly for many years in the production of the best long-staple cotton, so absolutely essential to the manufacture of many cotton fabrics, our cotton growers have permitted not only this monopoly to pass from their hands but have also looked on while the pest destroyed what was left of the former possessions. To-day the Sea Island production is practically negligible and the American tire industry is dependent upon foreign producers for one of its most important raw materials. Of the best Sea Island quality there is not enough produced to go around, and the fact that approximately half of it is grown in our own market is immaterial. Of the lower grades of Sea Island and the best Egyptian product less than 10 per cent are produced in the United States, while England controls 89 per cent of it by way of the British Empire and the occupation of Egypt. Moreover, 70 per cent of the lower grades, comprising Egyptian, American, and the Peruvian group of long-staple cottons, is produced inside the British Empire. Of course, steps have already been taken to remedy the situation, but the excellent results obtained so far in various sections of the United States cannot satisfy the increasing demand for the product coming from the American tire industry and other industries that are buyers of this grade of cotton.

The wave of high prices, produced by the war, is now well past its crest and the chances are that prices will decline. The break having started in one part of the market will soon spread to other branches of the industry and it is difficult to see how the tire industry can keep up prices if reductions in many other fields become necessary. Experience has shown that, whenever there is a general decline in prices, a downward movement independent of the cost of production usually follows, resulting in financial loss to those factories who are caught napping. Two alternatives are left to an industry in such a situation. One is to get out of business and the other is to increase the supply of the raw material, which in this instance is long-staple cotton.

LOCATION OF VISIBLE SUPPLIES.

There is no doubt that the latter way will recommend itself most favorably to our tire manufacturers. It is the only alternative that will make possible the continuation of business and avoid an all around reduction in the fabric specifications of the American automobile tire. But the possibilities of adding to the existing resources of long-staple are only in part within the reach of our cotton consumers. Of the available supply of 1921, estimated to be 330,000,000 pounds, approximately only one-quarter is expected to consist of American cotton. Practically all the rest, excluding small quantities located in Peru, is to come from Egypt.

The determination of the price of the article, therefore, does not lie in American hands. The market point of gravity has changed to England and it is England also that will make the price. No doubt England does not intend to put undue pressure upon the American tire manufacturer in search of long-staple cotton, but the situation is one that deserves the closest attention of all who are interested in the production of tire fabrics and the making of tires.

Long-staple cotton, as represented by Sea Island and Egyptian, is a variety distinct from other grades and qualities. It thrives in certain regions of the world where conditions are especially suitable for its propagation. But it seems to have its real home in the Sea Islands. Only the climate and soil of these islands produces from year to year that fine quality and length of staple that is the characteristic of this cotton. In all other countries where it has been introduced with the aid of seed brought from the Sea Islands, it shows a tendency to deteriorate, and must be improved by occasionally introducing new seed. The best staple is produced in the British West Indies. A somewhat inferior quality is grown in Florida, Georgia, and, during recent years, in Arizona. Some of it is grown in the West Indies, but to-day the bulk of the supply finds its origin in Egypt. That country also produces by far the largest quantity of long-staple cotton in the world and, together with its large output of Sea Island, dominates the long-staple cotton situation. In fact the predominance of Egypt in this respect has been felt to be a distinct disadvantage to international cotton trading, as it makes the world's cotton industry dependent on one market for nearly three-quarters of its total requirements of long-staple cotton. The small production of long-staple cotton in the United States or that of Peru cannot really be sufficient to relieve any shortage that would be caused by a sudden breakdown in the Egyptian supplies.

LIMITATION OF EGYPTIAN COTTON SUPPLIES.

Such a breakdown, however, is by no means an utter impossibility. If proof were required for this contention, it is supplied by the recent report of the British Empire Cotton Growing Committee that has made a very intimate study of the conditions of cotton production in the British Empire with the avowed purpose of making the Empire independent of foreign cotton supplies. Egypt comes in for a great deal of appreciation. The report points out the possibility, now unfortunately nearly an accomplished fact, of the likely destruction of the Georgia and Florida Sea Island cotton crops and deducts from this the great importance of Egyptian cotton for the future needs of the Empire. American spinners that consume long-staple cotton have similarly hoped to secure supplies from this source and it is therefore important to state that the Eygptian resources are not at all unlimited, in fact they have already reached a point where little additional production may be expected. Although Egypt appears to be a very large country on the map, its cultivated area is comparatively small, as it is closely narrowed in on both sides by the desert. All in all, 12,000 square miles can be cultivated and it would be utterly impossible to plant all of it with cotton. In fact the great stress laid upon cotton production in Egypt forms to-day a distinct danger to the economic balance of the country which is exposed to very severe risks whenever the crop does not come up to expectations. Also the best cotton, that of the Sea Island variety, grows only in the so-called Nile delta, where the total cultivated area does not exceed 3,100,000

acres. Throughout the whole cotton territory of Egypt cultivation can be carried on only by the aid of irrigation. This has certain definite disadvantages which are not always connected with irrigation in other parts of the world. If the Nile is low or falls early in the autumn, the period of water scarcity begins early the next spring, and if this is followed by a late Nile, the period of scarcity is still more prolonged during the next summer. So even with the protection of the Nile water, scarcity may arise. But in addition, there is also the danger of an oversupply of water, an example of which was given during the year 1908 when one-third of the cotton crop was ruined owing to over watering. Therefore, to make the water supply of Egypt not only permanent but also safe for the consumer, it will become necessary to execute vast schemes of storage and irrigation of which only a beginning is made.

All irrigation is expensive and increases the cost of production. The cost of adding to Egypt's irrigation facilities may be very high and the cotton of that country must feel the effect. The Cotton Growing Committee proposes to open by irrigation a large part of the available land in the delta which would permit the production of an additional 800,000 bales of cotton. The cost of this enterprise is estimated at $180,000,000 or, as the report says, the value of one year's crop at present prices. The addition to the supply might be well worth the expense, but the plan cannot be completed before 20 years at least. So, whatever may be the outlook for our old age, the present does not seem to be materially improved. Finally, Egyptian cotton is attacked just as readily by insect pests as that in the United States. The Egyptian cotton has an enemy of its own, the seed boll worm. It appeared, providentially for its own propagation, during the year 1913, and has not been fought very energetically by the British authorities in view of the more important battles on hand by the summer of 1914. The result is that notwithstanding irrigation, the Egyptian cotton crop is smaller to-day than in former years, a fact that will affect very seriously the tire industry of the world.

ENGLISH TIRE INDUSTRY WILL HAVE FIRST CALL UPON EGYPTIAN COTTON.

The English have a tire industry of their own. If Egyptian cotton should run below the requirements of that industry there is just a possibility that England will provide first for the needs of her own manufacturers and let the others shift for themselves. It is open to England to protect her cotton resources against the foreign consumer by various means without interfering seriously with the general organization of the Empire. An example of what might be done is the recent act of the Indian Council levying an export duty of 15 per cent upon the export of certain classes of Indian hides if exported to points outside the British Empire. With the world running short of long-staple cotton and Egypt being the only source of supply, some similar expedient may suggest itself to the Egyptian Government, and no other source would be left to our tire manufacturers outside our own small production and the not very plentiful supply of Peruvian cotton.

No doubt this situation cannot be permitted to exist for any length of time, and especially when it is considered that all the india rubber consumed by the United States tire industry is also supplied from outside the United States. What such a dependence of an industry upon foreign sources of raw material may mean to any country has been illustrated most recently in the case of our own rubber industry when a special arrangement had to be made with England for the supply of rubber in the early days of the war, and still more by Germany, where whole industries were destroyed from the same cause.

The American tire industry can correct the cotton situation only by aiding in increasing the supply. As the United States is a cotton-producing country and able to produce a long-staple cotton that serves all the purposes of the tire fabric industry, there is no reason why greater efforts toward adding to its supply should not be made at home. The present need is real and it does not permit much further delay. There is an apparent shortage of 70,000,000 pounds in our own industry alone, and the whole tire-producing world is out for whatever can be had of the material. The present shortage will be felt just as severely in Europe. Unfortunately for the consumer, it does not affect the raw material alone but also extends to the industrial equipment.

MORE SPINNING AND WEAVING FACILITIES REQUIRED.

The demand has outgrown the facilities for handling the production. Even if our cotton growers could be prevailed upon to increase the acreage of long-staple cotton and add the required 70,000,000 pounds, it is still doubtful whether we could hold in readiness the spindles and looms necessary for the manufacture of the fabrics. This is a feature of the situation that must not be left unattended. There are sufficient examples in our own economic history where groups of producers were induced to increase their production only to find that the added quantities could not be made ready for the market. Prices declined as the result of such an occurrence and the producer lost confidence in his advisers. The following year less of the product was made available by the farmers than in the years preceding the increase. The same might happen to our cotton growers. Therefore let more equipment be ready in time. Getting additional industrial equipment is more difficult to-day than increasing agricultural production. The main difficulty in the way of accomplishing this is that the tire makers will not be able to pay much higher prices or even the present ones for fabrics in the future. What, then, will be the inducement for the cotton fabric producers to add to the output? Opinions differ as to whether the price of long-staple cotton will be the only factor likely to bring about the desired adjustment of demand and supply.

The production of long-staple cotton offers to the planter a special inducement because, when once firmly established, it brings a better result for the labor and cost expended upon its production than any lower-grade cotton. There will always be planters ready to make a special effort in favor of the better-priced product and if our tire makers are willing to offer to those producers a steady market they will probably find enough cotton forthcoming for their purpose. Such a development, however, cannot be expected to take place inside a year or two. It may take three or even four years before the farmers have caught up with their opportunity and in the meantime the rapidly growing automobile industry may have enormously increased the demand for tires.

TRADE RECIPROCITY SUGGESTED.

In the meantime foreign long-staple cotton must be induced to come to us, and owing to the foreign exchange situation we are fortunately able to pay a comparatively good price for imported cotton without greatly increasing our own expense. Provided, therefore, our fabric makers do find an open market they should be able to secure foreign long-staple cotton, Egyptian or other, at rates commensurate with the existing selling prices for fabrics.

There is, however, another aspect to the present situation. Long-staple cotton for tire fabrics being a product that, at the present time at least, must be imported in limited quantities equal to the consumption, deserves the special protection of those in charge of the foreign trading activities of the nation. The sources from which this cotton can be obtained must be held open to all who require it. Free access to the raw materials of the world has been proclaimed as one of the reasons why the American nation joined the war. It is now to be seen that this right is not taken away from us and that we should be able to buy our long-staple cotton wherever we please, under conditions very much the same as those applying to our foreign competitors.

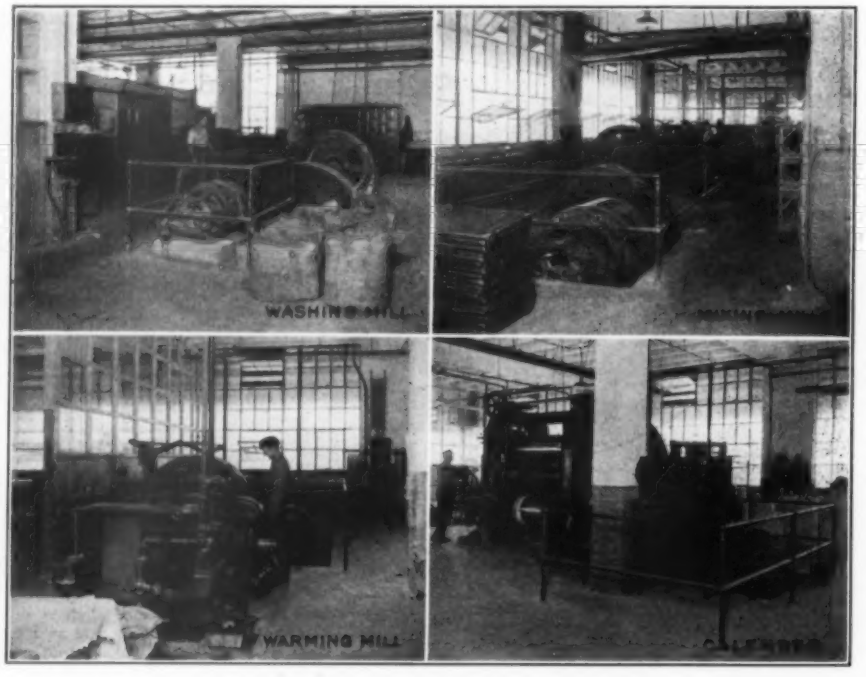
Electric Drive in a Tire and Tube Plant.

By H. F. Barton.[1]

ADDING A NEW INDUSTRY to an already diversified group in the city from which it derives its name, the Syracuse Rubber Company affords an excellent example of a young, vigorous and rapidly growing organization. The product consists of cord tires and automobile tubes bearing the trade name of Syra-Cord. Organized in July, 1919, incorporated under the laws of the state of New York with a capitalization of $3,000,000, the company is the only manufacturer of rubber tires and tubes in central New York.

The plant is situated at East Syracuse, a suburb, on the main line of the New York Central Railroad and the electric lines of the New York State Railways. Here the company owns thirty-eight acres of desirable land that will permit the expansion which the present business of the company indicates will be necessary.

Approximately three hundred people are employed at the present time on an eight-hour shift, though it is anticipated that eventually three eight-hour shifts will be employed. The ultimate capacity of the present plant will be approximately twelve hundred casings and three thousand tubes a day based on three eight-hour shifts.



ELECTRICALLY DRIVEN RUBBER MACHINERY.

The present plant, known as Unit No. 1, is a three-story structure of brick, steel and concrete, with an effective working space of twelve thousand square feet on each floor, which is exclusive of hallways, elevator shafts, etc. The design and construction of the building is such as to insure the most efficient handling of all material and any duplication of operations is eliminated. The raw material is unloaded from the cars to the platform thence to the warehouse on the first floor. From here it goes through the washing process, the various mixers, mills and calenders and then to the second floor where the tires are built up.

In line with other progressive and up-to-date methods which this company follows, it adopted electricity as the motive power for driving all of the machines in the plant. Also, appreciating the advantages of purchasing power, electric current is bought from a local company which distributes electric energy transmitted from Niagara Falls, a distance of one hundred and fifty miles.

Alternating current is delivered by the lighting company at twenty-five cycles, three-phase, 11,000 volts to its own outdoor substation. Here the voltage is stepped down by means of three 250-kva. Westinghouse oil-insulated self-cooled transformers to 2,300 volts, the potential required by the larger alternating-current motors used in the mill. The smaller alternating-current motors are supplied through a bank of three 37½-kva. transformers that step down from 2,300 to 440 volts, the voltage for which the motors are wound.

As the calenders have a wide range of speed, direct-current motors are a much more satisfactory form of drive, and this kind of current is obtained from a Westinghouse motor-generator, consisting of a 2,300-volt synchronous-motor direct connected to a 200-kw., 115/230-volt direct-current three-wire generator. This double voltage permits the obtaining of the desired speed range on the motor-driven calender, the lower speeds being obtained on 115 volts and the higher speeds on 230 volts.

A 66-inch calender is connected through a herringbone reduction gear to a 100-h.p. variable-speed direct-current motor that is controlled by an automatic double voltage calender controller providing dynamic braking and operated by a drum type master controller. Safety rods are placed on either side of the calender.

The warming mill, mixing mill and washing mill are each driven by individual Westinghouse alternating-current motors equipped with controllers and solenoid-operated brakes.

THE NEW HAVEN SHERARDIZING CO., NEW HAVEN CONNECTICUT, has increased its capital stock from $50,000 to $100,000. It has also removed its factory to 868 Windsor street, Hartford, Connecticut, in order to have increased space and room for up-to-date equipment to permit doubling its capacity and make other expansion necessary in connection with contemplated new business with the rubber trade. Orders and correspondence should still be sent to New Haven, as the office of the company will remain there for the present.

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[1] Syracuse office, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

Standard General Methods for Testing Cotton Fabrics.[1]

Serial Designation: D 39—18 T; Issued, 1915; Revised, 1916, 1918.

1. The following general methods are intended to be applicable for testing cotton fabrics. Where a material requires special treatment, specific methodes will be described as they are developed for that material and such special tests shall have precedence over the general method.

I. CONDITION.

2. The dry condition of cotton fabric shall be understood to be absolute dryness obtained by placing the material in a ventilated drying oven maintained at a temperature of 105 to 110 degrees C. (221 to 230 degrees F.) and dried to constant weight as determined by two consecutive weighings without removal from the oven, to be taken not less than ten minutes apart, and to show a further loss of not more than 0.1 per cent of the previous weighing.

3. The standard condition of cotton fabric shall be understood to be the condition in which it contains 6.5 per cent of its dry weight of moisture.

II. TEST METHODS.

(A) LENGTH.

4. The length of a roll or piece shall be determined by running the cloth over a measuring drum of known circumference, from which the yardage is registered by a dial or counter driven by a chain or other positive or non-slip mechanism. Just enough uniform tension[2] is to be used on the cloth to keep it running flat and true.

(B) WIDTH.

5. (*a*) The width of a roll or piece shall be determined at five different places uniformly distributed along the full length of the roll or piece, and may be determined at the same time as the total length.

(*b*) The average of the five measurements shall be the width.

(C) WEIGHT.

6. (*a*) PREFERRED METHOD.—The net weight of the roll or piece from which covering and binding have been removed shall be determined. The net weight of the roll or piece divided by its superficial area in square yards shall be taken as the normal net weight per square yard.

(*b*) ALTERNATIVE METHOD.—Three samples of known area, to contain not less than 4 square inches each, shall be stamped (preferably cut with a steel die) from one end of the roll or piece and quickly weighed. The normal square yard weight shall be computed from the average weight of these three samples.

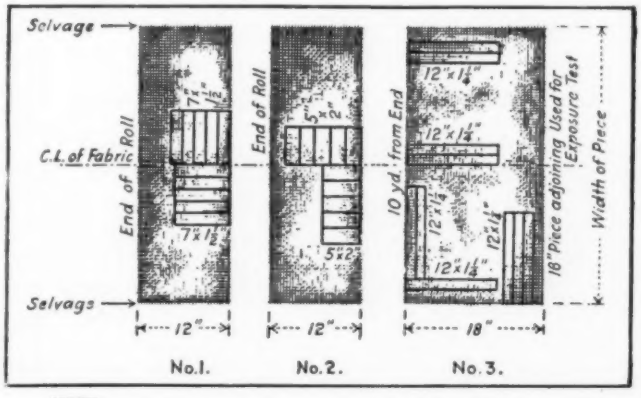
7. (a) PREFERRED METHOD.—For the determination of dry weight two test specimens of approximately equal area, each not less than 4 inches in length and of the entire width of the fabric, shall be cut one from each end of the roll or piece. The one from the outside end of the roll shall be taken as soon as the wrapping is removed and the one from the inner end of the roll as soon as the inner end of the roll has been reached in running the roll. The two samples shall be taken as soon as possible. These samples shall be placed in a dry air-tight container, the weight of which has been previously determined, and carefully weighed therein and then removed (check weight being made on container), the net weight calculated and the sample dried to constant weight in manner described in Section 2. The difference between the original weight of sample and the dry weight is the loss of moisture which when computed as percentage of the dry weight is the percentage regain of the material. The dry weight per square yard is then obtained from the normal weight per square yard as obtained in Section 6 (*a*), as follows:

$$\frac{\text{Normal weight per sq. yd.} \times 100}{100 + \text{percentage regain}} = \text{Dry weight per square yard.}$$

(b) ALTERNATIVE METHOD.—From one end of the roll or piece five specimens, each 3 by 4.32 inches, representing 0.01 square yard, shall be stamped (preferably cut with a steel die). Two specimens shall be cut near the selvages, one at the center, and the other two between the selvages and the center. These five specimens, with a total area equal to 0.05 square yard, shall be placed in the wire basket of a ventilated drying oven. The

TABLE I.—TENSILE STRENGTH TEST METHODS.

Method No.	1 Strip Method.	2 Grab Method.	3 Strip Method.	4 Single Strand.
Dimensions of specimens, in.	7 by 1½	5 by 2	12 by 1¼	..
Width raveled to standard or specified threads per inch	1	..	1	..
Min. width of bottom or back jaws, in.	1½	2	1½	..
Width of top or front jaws, in.	1½ (min.)	1	1½ (min.)	..
Distance between jaws, in.	3	1	8	10
Speed of the pulling jaw, in. per min.	20	12	12	12
Number of specimens each, warp and filling	5	5	5	20 strand



Notes.—1. When material is less than 24 inches wide, the swatch shall be cut 24 inches long and the test specimens shall be laid out in such a manner that no part of any specimen shall come within 2 inches of either selvage.

2. When the specified number of threads or picks per inch is in fraction, the number of threads broken shall include the fraction as a full thread.

TABLE II.—TENSILE STRENGTH: TEST METHOD CLASSIFICATION.

Name of Fabric.	Test Method No.	Humidity Conditions.
Tire fabrics, including		Test specimens shall be tested in a dry condition as defined in Section 2. They shall be taken one at a time from the drying oven and broken in the testing machine within 30 seconds from the time of removal from the oven.
Carcass building fabric	1	
Chafing strip	1	
Breaker strip	1	
Cord fabric	4	
Ducks, including		(*a*) Specimens may be broken in dry condition as specified above for tire fabrics, such tests to be captioned, "Tested Bone Dry." (*b*) Specimens may be tested in their natural condition as taken from the roll or piece and corrected for the moisture present by the method of Section 12, such tests to be captioned, "Corrected for Standard Moisture Regain."
Hose duck	2	
Belt duck	2	
Tent duck	2	
Army duck	2	
Enameling duck	2	
Sail duck	2	
Numbered duck	2	
Drills	2	
Sheetings	2	
Osnaburg	2	
Coutils	2	
Balloon Cloth[1]	1	
Wing fabric[2]	3	Exposed before testing for at least two hours in an atmosphere of 65 per cent relative humidity and 70 degrees F. and tested in this atmosphere.

[1]Balloon cloth shall be tested on machine of the inclination balance type with maximum capacity of 400 pounds.

[2]The elongation of wing fabric shall be observed for each specimen when subjected to loads of 10 pounds, 20 pounds and 70 pounds. Wherever possible autographic records shall be taken.

Note.—Fabrics not included in the above list will be given a test method classification by Committee D-13 on application of those interested.

[1]Reported for adoption, American Society for Testing Materials.

[2]It has been suggested that a uniform tension of 2.5 times the weight of five running yards of the fabric will be sufficient to keep the fabric flat and preserve a proper relation for comparison of different fabrics. Invitation is extended to report to the committee the results of such tests upon different fabrics.

basket shall be so constructed with partitions, not less than ¼-inch apart, that the specimens may stand on edge. The specimens shall then be dried to bone dryness as described in Section 2. The combined weight of these specimens after drying represents the dry weight of 0.05 square yard of the fabric, and the dry weight per square yard of the roll or piece is obtained by multiplying the above quantity by 20.

8. If by the first tests the fabric fails to meet the specifications a second swatch shall be taken as follows: If the roll or piece is a complete warp, the second swatch shall be cut from the center of the roll or piece. If the roll or piece is a part warp, the second swatch shall be taken not less than 1½ yards from the other end.

9. The difference between the normal weight of the fabric, Section 6, and the dry weight, Section 7, is the amount of moisture present.

(*a*) When computed as percentage of the normal weight this is the moisture content of the material.

(*b*) When computed as percentage of the dry weight, this is the moisture regain of the material.

TABLE OF CORRECTED TENSILE STRENGTHS OF FABRIC AND YARN AT VARIOUS MOISTURE REGAINS.

Apparent Tensile Strength, lbs.	Moisture Regain in Fabric or Yarn.—Per cent of Dry Weight.																
	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.50	
8	5.9	5.8	5.7	5.7	5.6	5.5	5.5	5.4	5.3	5.3	5.2	5.2	5.1	5.1	5.1	5
10	11.8	11.6	11.5	11.3	11.2	11.1	10.9	10.8	10.7	10.6	10.5	10.3	10.2	10.1	10.1	10
15	17.7	17.4	17.2	17.0	16.8	16.6	16.4	16.2	16.0	15.9	15.7	15.5	15.3	15.2	15.2	15
20	23.6	23.3	22.9	22.7	22.4	22.2	21.9	21.6	21.4	21.1	20.9	20.7	20.4	20.2	20.2	20
25	29.5	29.1	28.7	28.4	28.0	27.7	27.4	27.0	26.7	26.4	26.1	25.8	25.6	25.3	25.3	25
30	35.3	34.9	34.5	34.0	33.6	33.2	32.8	32.5	32.1	31.7	31.4	31.0	30.7	30.3	30.3	30
35	41.2	40.7	40.2	39.7	39.2	38.8	38.3	37.9	37.4	37.0	36.6	36.2	35.8	35.4	35.4	35
40	47.1	46.5	46.0	45.4	44.8	44.3	43.8	43.3	42.8	42.3	41.8	41.3	40.9	40.4	40.4	40
45	53.0	52.3	51.7	51.1	50.4	49.8	49.3	48.7	48.1	47.6	47.0	46.5	46.0	45.5	45.5	45
50	58.9	58.2	57.5	56.7	56.0	55.4	54.7	54.1	53.5	52.9	52.3	51.7	51.1	50.5	50.5	50
55	64.8	63.9	63.2	62.4	61.7	60.9	60.2	59.5	58.8	58.1	57.5	56.8	56.2	55.6	55.6	55
60	70.7	69.8	68.9	68.1	67.3	66.5	65.7	64.9	64.1	63.4	62.7	62.0	61.3	60.7	60.7	60
65	76.6	75.6	74.7	73.8	72.9	72.0	71.1	70.3	69.5	68.7	67.9	67.2	66.4	65.7	65.7	65
70	82.5	81.4	80.4	79.4	78.5	77.5	76.6	75.7	74.8	74.0	73.2	72.3	71.5	70.8	70.8	70
75	88.3	87.2	86.2	85.1	84.1	83.1	82.1	81.1	80.2	79.3	78.4	77.5	76.6	75.9	75.9	75
80	94.2	93.0	91.9	90.8	89.7	88.6	87.6	86.5	85.5	84.6	83.6	82.7	81.8	80.9	80.9	80
85	100.1	98.9	97.7	96.4	95.3	94.1	93.0	91.9	90.9	89.8	88.8	87.8	86.9	85.9	85.9	85
90	106.0	104.7	103.4	102.1	100.9	99.7	98.5	97.4	96.2	95.1	94.1	93.0	92.0	91.0	91.0	90
95	111.9	110.5	109.1	107.8	106.5	105.4	104.0	102.8	101.6	100.4	99.3	98.2	97.1	96.0	96.0	95
100	117.8	116.3	114.9	113.5	112.1	110.8	109.4	108.2	106.9	105.7	104.5	103.3	102.2	101.1	101.1	100
105	123.7	122.1	120.6	119.1	117.7	116.3	114.9	113.6	112.3	111.0	109.7	108.5	107.3	106.1	106.1	105
110	129.6	127.9	126.4	124.8	123.3	121.8	120.4	119.0	117.6	116.3	115.0	113.7	112.4	111.2	111.2	110
115	135.5	133.7	132.1	130.5	128.9	127.4	125.9	124.4	123.0	121.6	120.2	118.8	117.5	116.3	116.3	115
120	141.4	139.6	137.9	136.2	134.5	132.9	131.0	129.8	128.3	126.8	125.4	124.0	122.6	121.3	121.3	120
125	147.3	145.4	143.6	141.8	140.1	138.4	136.8	135.2	133.7	132.1	130.6	129.2	127.8	126.4	126.4	125
130	153.1	151.2	149.3	147.5	145.7	144.0	142.3	140.6	139.0	137.4	135.9	134.3	132.9	131.4	131.4	130
135	159.0	157.0	155.1	153.2	151.3	149.5	147.8	146.0	144.3	142.7	141.1	139.5	138.0	136.5	136.5	135
140	164.9	162.8	160.8	158.9	156.9	155.1	153.2	151.4	149.7	148.0	146.3	144.7	143.1	141.5	141.5	140
145	170.8	168.6	166.6	164.5	162.5	160.6	158.7	156.8	155.0	153.3	151.5	149.9	148.2	146.6	146.6	145
150	176.7	174.4	172.3	170.2	168.1	166.1	164.2	162.3	160.4	158.6	156.8	155.0	153.3	151.6	151.6	150
155	182.6	180.3	178.1	175.9	173.7	171.7	169.6	167.7	165.7	163.8	162.0	160.2	158.4	156.7	156.7	155
160	188.5	186.1	183.8	181.6	179.4	177.2	175.1	173.0	171.1	169.1	167.2	165.4	163.5	161.7	161.7	160
165	194.4	191.9	189.5	187.2	185.0	182.7	180.6	178.5	176.4	174.4	172.4	170.5	168.6	166.8	166.8	165
170	200.3	197.7	195.3	192.9	190.6	188.3	186.1	183.9	181.8	179.7	177.7	175.7	173.7	171.9	171.9	170
175	206.1	203.5	201.0	198.6	196.2	193.8	191.5	189.3	187.1	185.0	182.9	180.9	178.9	176.9	176.9	175
180	212.0	209.3	206.8	204.2	201.8	199.4	197.0	194.7	192.5	190.3	188.1	186.0	184.0	182.0	182.0	180
185	217.9	215.1	212.5	209.9	207.4	204.9	202.5	200.1	197.8	195.6	193.3	191.2	189.1	187.0	187.0	185
190	223.8	220.9	218.3	215.6	213.0	210.4	208.0	205.5	203.2	200.8	198.6	196.4	194.2	192.1	192.1	190
195	229.7	226.8	224.0	221.3	218.6	216.0	213.4	210.9	208.5	206.1	203.7	201.5	199.3	197.1	197.1	195
200	235.6	232.6	229.8	226.9	224.2	221.5	218.9	216.3	213.8	211.4	209.0	206.7	204.4	202.1	202.1	200
205	241.5	238.4	235.5	232.6	229.8	227.1	224.4	221.8	219.2	216.7	214.2	211.9	209.5	207.2	207.2	205
210	247.4	244.2	241.2	238.3	235.4	232.6	229.8	227.2	224.5	222.0	219.5	217.0	214.6	212.3	212.3	210
215	253.3	250.0	247.0	244.0	240.9	238.1	235.3	232.6	229.9	227.3	224.7	222.2	219.7	217.3	217.3	215
220	259.2	255.9	252.7	249.6	246.6	243.7	240.8	238.0	235.2	232.5	229.9	227.4	224.9	222.4	222.4	220
225	265.1	261.7	258.5	255.3	252.2	249.2	246.3	243.4	240.6	237.8	235.2	232.5	230.0	227.5	227.5	225
230	270.9	267.5	264.2	261.0	257.8	254.7	251.7	248.8	245.9	243.1	240.4	237.7	235.1	232.5	232.5	230
235	276.8	273.3	270.0	266.7	263.4	260.3	257.2	254.2	251.3	248.4	245.6	242.9	240.2	237.6	237.6	235
240	282.7	279.1	275.7	272.3	269.0	265.8	262.7	259.6	256.6	253.7	250.8	248.0	245.3	242.6	242.6	240
245	288.6	285.0	281.4	278.0	274.6	271.4	268.1	265.0	262.0	259.0	256.1	253.2	250.4	247.7	247.7	245
250	294.5	290.7	287.2	283.7	280.1	276.9	273.6	270.4	267.2	264.3	261.3	258.4	255.5	252.7	252.7	250
255	300.4	296.6	292.9	289.3	285.8	282.4	279.1	275.8	272.7	269.5	266.5	263.5	260.6	257.8	257.8	255
260	306.3	302.4	298.7	295.0	291.5	288.0	284.6	281.2	278.0	274.8	271.7	268.7	265.7	262.8	262.8	260
265	312.1	308.2	304.4	300.7	297.1	293.5	290.0	286.7	283.4	280.1	277.0	273.9	270.8	267.9	267.9	265
270	318.1	314.0	310.2	306.4	302.6	299.0	295.5	292.1	288.7	285.4	282.2	279.0	276.0	272.9	272.9	270
275	323.9	319.8	315.9	312.0	308.3	304.6	301.0	297.5	294.0	290.7	287.4	284.2	281.1	278.0	278.0	275
280	329.8	325.6	321.7	317.7	313.9	310.1	306.5	302.9	299.4	296.0	292.6	289.4	286.2	283.1	283.1	280
285	335.7	331.5	327.4	323.4	319.5	315.7	311.9	308.3	304.7	301.3	297.9	294.5	291.3	288.1	288.1	285
290	341.6	337.3	333.1	329.1	325.1	321.2	317.4	313.7	310.1	306.5	303.1	299.7	296.4	293.2	293.2	290
295	347.5	343.1	338.9	334.7	330.7	326.7	322.9	319.1	315.4	311.8	308.3	304.9	301.5	298.2	298.2	295
300	353.4	348.9	344.6	340.4	336.3	332.3	328.3	324.5	320.7	317.1	313.5	310.0	306.6	303.3	303.3	300
305	359.3	354.7	350.4	346.1	341.9	337.8	333.8	329.9	326.1	322.4	318.8	315.2	311.7	308.3	308.3	305
310	365.2	360.5	356.1	351.8	347.5	343.3	339.3	335.3	331.5	327.7	324.0	320.4	316.8	313.4	313.4	310
315	371.1	366.4	361.9	357.4	353.1	348.9	344.8	340.7	336.8	333.0	329.2	325.5	321.9	318.4	318.4	315
320	376.9	372.2	367.6	363.1	358.7	354.4	350.2	346.1	342.2	338.3	334.4	330.7	327.1	323.5	323.5	320
325	382.8	378.0	373.3	368.8	364.3	360.0	355.7	351.6	347.5	343.5	339.7	335.9	332.2	328.5	328.5	325
330	388.7	383.8	379.1	374.4	369.9	365.5	361.2	357.0	352.8	348.8	344.9	341.0	337.3	333.6	333.6	330
335	394.6	389.6	384.8	380.1	375.5	371.0	366.7	362.4	358.2	354.1	350.1	346.2	342.4	338.6	338.6	335
340	400.5	395.4	390.6	385.8	381.1	376.6	372.1	367.8	363.5	359.4	355.3	351.4	347.5	343.7	343.7	340
345	406.4	401.3	396.3	391.5	386.7	382.1	377.6	373.2	368.9	364.8	360.6	356.5	352.6	348.8	348.8	345
350	412.3	407.1	402.1	397.1	392.3	387.6	383.1	378.6	374.2	370.0	365.8	361.7	357.7	353.8	353.8	350
355	418.2	412.9	407.8	402.8	397.9	393.2	388.5	384.0	379.6	375.2	371.0	366.9	362.8	358.9	358.9	355
360	424.1	418.7	413.6	408.5	403.5	398.7	394.0	389.4	384.9	380.5	376.2	372.0	367.9	363.9	363.9	360
365	429.9	424.5	419.3	414.2	409.2	404.3	399.5	394.8	390.3	385.8	381.5	377.2	373.1	369.0	369.0	365
370	435.8	430.3	425.0	419.8	414.8	409.8	405.0	400.2	395.6	391.1	386.7	382.4	378.2	374.0	374.0	370
375	441.7	436.2	430.8	425.5	420.4	415.3	410.4	405.6	401.0	396.4	391.9	387.5	383.3	379.1	379.1	375
380	447.6	442.0	436.5	431.2	426.0	420.9	415.9	411.1	406.3	401.7	397.1	392.7	388.4	384.1	384.1	380
385	453.5	447.8	442.3	436.9	431.6	426.4	421.4	416.5	411.7	407.0	402.4	397.9	393.5	389.2	389.2	385
390	459.4	453.6	448.0	442.5	437.2	432.0	426.9	421.9	417.0	412.2	407.6	403.0	398.6	394.3	394.3	390
395	465.3	459.4	453.8	448.2	442.8	437.5	432.3	427.3	422.3	417.5	412.8	408.2	403.7	399.3	399.3	395
400	471.2	465.2	459.5	453.9	448.4	443.0	437.8	432.7	427.7	422.8	418.0	413.4	408.7	404.4	404.4	400

EXPLANATION.—A sample of fabric in its natural state gave an apparent tensile strength of 210 pounds. After drying its moisture regain at the time of the test was found to have been 4.75 per cent of the dry weight. In the line opposite 210 and under 4.75 regain in the table will be found the figure 227.2, the strength of the fabric corrected to a full regain of 6.5 per cent. In the same manner a fabric with an apparent strength of 192 pounds and a regain of 5.25 per cent would have a corrected strength of 202.9 as determined by interpolation from the table.

(D) NUMBER OF THREADS PER INCH.

10 (*a*) The number of threads per inch or count of the fabric shall be determined by counting a space of not less than 1 inch in at least five different places in the roll or piece.

(*b*) The average of the five determinations shall be the count.[3]

(E) THICKNESS.

11. (*a*) The thickness shall be measured by an automatic micrometer which presses upon at least 0.5 square inch of the fabric with a uniform constant pressure, and which is so mounted as to make measurements 6 inches from the selvage.

(*b*) At least ten measurements at different portions of the roll or piece shall be made, and the average shall be the thickness of the fabric.

(F) STRENGTH.

12. Tensile strength tests shall be made by one of the four methods described as follows in detail, and fabrics shall be tested by the method shown for the classification under which they fall. In each case the results shall be recorded separately for warp and filling.

For the determination of tensile strength a swatch of the length specified in Table I shall be cut the entire width of the cloth and test specimens shall be cut from this swatch according to the respective diagrams shown at the bottom of Table I.

Two methods of determining the tensile strength shall be recognized:

(*a*) STRIP TEST (FIG. 1).—Under this method a long narrow strip of the fabric shall be clamped at each end by the jaws of the testing machine and strained to the point of rupture.

(*b*) GRAB TEST (FIG. 2).—Under this method the testing machine jaws, each of definite width, shall be made to reach into the body of a rectangular piece of fabric and shall be clamped a definite distance apart. Care shall be taken that the same set of threads are embraced by both pairs of jaws. The specimen shall then be strained to the point of rupture.

13. CORRECTION FOR STANDARD MOISTURE REGAIN.—When it is desired to test tension specimens for tensile strength, in the natural state in which they are cut from the roll or piece, the following method shall be employed to reduce the tensile strength found to the common basis of an assumed standard moisture regain equal to 6.5 per cent of the bone-dry weight:

(*a*) After preparing the specimens for the testing machine, those cut from the warp and those from the filling shall be weighed each in a separate batch under the natural moisture conditions which obtain at the time in the testing room.

(*b*) The specimens shall then be tested immediately, in as rapid succession as possible, by the method specified in Table II.

(*c*) After rupture the broken specimens (entire) shall be placed in the basket of an oven and dried as defined in Section 2.

[3]For tire fabric used for carcass building the number of threads per inch shall be determined by counting a space of 10 inches in at least five different places in the roll or piece, and the average of the five determinations shall be the count.

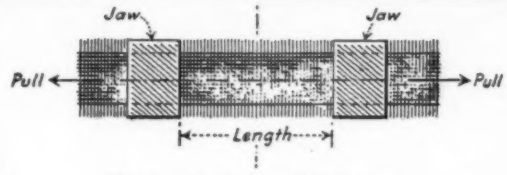


FIG. 1.—Illustration of Strip Test.

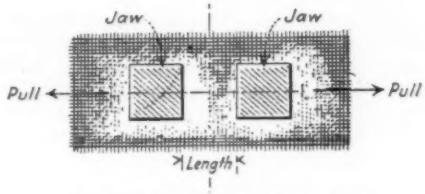


FIG. 2.—Illustration of Grab Test.

(*d*) The total warp and filling specimens shall be grouped each by themselves, forming two batches. The aggregate dry weight of the warp and filling specimens shall thus be obtained and the moisture regain at the time of the test determined.

(*e*) The following formula shall then be applied, based upon the assumption that the standard moisture regain of manufactured cotton is 6.5 per cent of the dry weight, that the actual percentage regain is between the limits of 3 and 6.5 per cent of the dry weight, and that for 1 per cent of moisture regain there is an increase of 6 per cent in the tensile strength of the fabric.

$$\text{Tensile strength corrected to standard moisture regain} = \frac{(\text{Tensile strength from machine reading}) \times 139}{100 + (6 \times \text{Actual Percentage Regain})}$$

Example.—A specimen of fabric broken under natural conditions gave a tensile strength of 294 pounds as read from the machine dial. By weighing before and after drying the specimen was found to contain a moisture regain equal to 3 per cent of the bone-dry weight. The tensile strength corrected to a common basis of 6.5 per cent moisture regain would therefore be

$$\text{Tensile strength corrected} = \frac{294 \times 139}{100 + (6 \times 3)} = 346 \text{ pounds.}$$

STANDARD SIZES FOR CHECKS AND INVOICES.

The Standardization Committee of the Purchasing Agents' Association has evolved several aids for both seller and purchasing agent or accounting officer.

The committee considered as the standard check size, 3½ by 8½ inches, which has already been adopted by over 100,000 business houses, with Federal Reserve Board Approval. The fact that most of these business concerns use a voucher check just double the size of the standardized check, and file the original invoice with a copy of the voucher, led to the selection of 8½ by 7 inches as the master size for the standardized invoice.

On account of filing devices, any other sizes selected should be such that they readily fold to 8½ by 7 inches, so 8½ by 7, 8½ by 11, and 8½ by 14 inches were the sizes preferred. It was decided to allow the printing to run either way of the sheet, to suit the sales organization.

G. H. Money of the Federal Rubber Co., Cudahy, Wisconsin, is one of the members of the Standardization Committee.

DETERMINATION OF SULPHUR IN VULCANIZED RUBBER.[1]

P. Dekker has subjected to accurate investigation some methods for determining free sulphur (in the acetone extract) and of the combined (and total) sulphur, described in recent literature. As a result of this study the following method has been adopted by the Netherland Government Institute at Delft for the determination of combined and total sulphur:

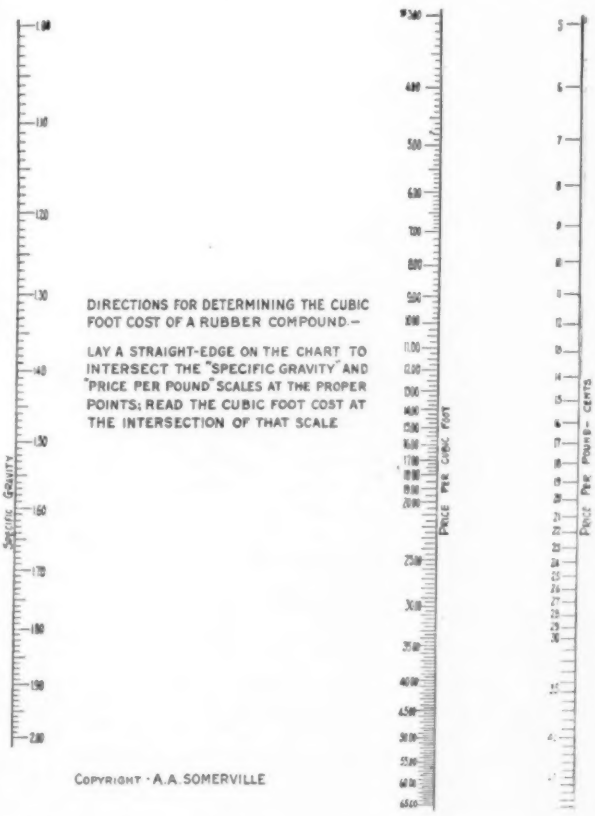
One gram of the sample is gently heated in an Erlemeyer flask of 200 to 300 cc. with 40 cc. nitric acid (specific gravity 1.4) and 6 grams of magnesium nitrate free of water till the liquid begins to foam, when the flame is removed. In case the foaming is so strong that there is danger of overflowing, the flask is cooled for a moment. As soon as the foaming has ceased it is gently boiled for one hour, then one to two drops of bromine are added and boiling continued for one-half hour. The liquid is then placed in a porcelain dish and evaporated nearly to dryness, 10 cc. strong hydrochloric acid is added and further evaporated till the residue becomes solid on removing the still liquid mass from the water bath. The residue is then dissolved in warm water, filtered, and sulphuric acid determined in the usual manner.[2]

[1] "Communications of the Netherland Government Institute for Advising the Rubber Trade and the Rubber Industry," Delft, Holland.

[2] Should insoluble sulphates remain behind on the filter, they are fused with potassium-sodium-carbonate.

CHART FOR DETERMINING THE COST PER CUBIC FOOT OF RUBBER MIXINGS.

A simple and direct method of determining the cubic foot cost of a rubber compound is here reproduced. The chart was designed and copyrighted by Dr. A. A. Somerville of the R. T. Vanderbilt Co. for free distribution to rubber chemists and compound men. It is of the well known "alignment" type, consisting of three mathematical scales covering a complete range of practical compounding possibilities, namely, a specific gravity scale from 1.00 to 2.00; a cost per pound scale from 5 to 50 cents, and a cubic foot scale covering all resultant combinations of the other two scales.


DIRECTIONS FOR DETERMINING THE CUBIC FOOT COST OF A RUBBER COMPOUND.—
LAY A STRAIGHT-EDGE ON THE CHART TO INTERSECT THE "SPECIFIC GRAVITY" AND "PRICE PER POUND" SCALES AT THE PROPER POINTS; READ THE CUBIC FOOT COST AT THE INTERSECTION OF THAT SCALE
SPECIFIC GRAVITY
PRICE PER CUBIC FOOT
PRICE PER POUND—CENTS
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BUY WAR SAVING STAMPS—BUILD FOR AMERICAN PROSPERITY and your own success.

JUDICIAL DECISIONS.

GOOD WEAR TIRE & TUBE CO. ENJOINED.

FEDERAL TRADE COMMISSION *vs.* SOPHIE COHN, SAMUEL M. CHAZANOFF AND B. COUNSELBAUM, doing business under the firm name and style of THE GOOD WEAR TIRE & TUBE CO.

The respondents formed a copartnership in March, 1920, under the name The Good Wear Tire & Tube Co., with their principal place of business in Chicago, Illinois, and engaged in manufacturing and selling reconstructed tires, buying second-hand and unserviceable tires, cementing and sewing them together, and advertising them as "Double Tires" with no hint of their composition, leading the public to believe they were made of new and unused material. Moreover, they had full knowledge of the existence and character of The Goodyear Tire & Rubber Co. and of the confusion the name they had taken would cause.

They are forbidden to use the name "Double Tread" for the tires they make, unless they add words which will show unmistakably that the tires are not made of new and unused material. They are also forbidden to use in interstate commerce the name, The Good Wear Tire & Tube Co. or any other name that resembles that of The Goodyear Tire & Rubber Co. (Federal Trade Commission, Docket 403, Washington, D. C., January 29, 1920.)

ACCEPTANCE TELEGRAM BINDS RUBBER CONTRACT.

FRED STERN & CO. *vs.* THE B. K. STURGIS CO.—United States District Court, Ninth District, San Francisco, May 25, 1920.

Damages claimed on account of failure to accept delivery of rubber shipments made during 1918. Acceptance was by telegram, with statement that contract would follow. Judge Rudkin held that the telegram was a binding contract, even though the words were embodied in the telegram that a contract was to be mailed; and that all the jury had to do was to fix the amount of the plaintiff's damages. Through a mistake the jury scattered and the case had to go on the next Court calendar.

CHARGES MISUSE OF NAME.

The McElrath Tire & Rubber Co., Ravenna, Ohio, has been granted a temporary injunction by Judge A. S. Cole, under $5,000 bond, against The McElrath Building Co., of the same town. It charged that the use of the name "McElrath" by the defendant company was an artifice intended to defraud both the plaintiff company and the public, there being no person of that name connected with the defendant company.

TUFFORD HEEL PATENT AGAIN SUSTAINED.

In an opinion handed down last month by United States District Judge Arthur L. Brown, the I. T. S. Rubber Co., of Elyria, Ohio, is sustained in its infringement suit against the United Lace & Braid Manufacturing Co., of Rhode Island. The action was brought in the Federal Court of Rhode Island some months ago. The plaintiff alleged that the defendant was infringing on its reissued latters patent No. 14,049 of January 11, 1916, in the manufacture of rubber heels. Judge Brown in his opinion declared: "I am of the opinion that claims five, six, and seven of the Tufford patent in suit are valid and infringed, and a draft decree may be presented accordingly."

CUSTOMS APPRAISER'S DECISIONS.

No. 43,624. Protest 851,889 of William Wrigley, Jr., Co. Chicago.) CHICLE.—Held that dessicated chicle is properly classified as refined, and held dutiable at 20 cents a pound. (Treasury Decisions, Vol 38, No. 12, March 18, 1920.)

No. 43,670. Protest 851,879 of G. W. Sheldon & Co. (Chicago.) CHICLE.—Dessicated or dried chicle is properly classified as refined, and dutiable at 20 cents a pound, not at 15 cents a pound as crude chicle. (Treasury Decisions. Vol. 38, No. 15, April 22, 1920.)

No. 43,694. Protest 933,528 of G. Amsinck & Co. (New York.) GUM CHICLE by similitude (on authority of Treasury Decision 38,382) is declared not dutiable at 20 cents a pound, but dutiable at 10 per cent ad valorem. (Treasury Decisions. Vol. 38, No. 17, May 6, 1920.)

No. 43,690. Protest 932,747 of The Rubber Association of America. GUM CAUCHILLO, invoiced as balata and classified by similitude at 15 cents a pound, is held properly dutiable at 10 per cent ad valorem. Treasury Decisions. Vol. 38, No. 17, May 6, 1920.)

No. 43,769. Protest 933,383 of Clauss Portenoy Co., New York. CRUDE CHICLE.—Chicle gathered as sap and subjected to no other process than boiling, to bring about coagulation, and sundried. Held to be crude and dutiable at 15 cents per pound. (Treasury Decisions, Vol. 38, No. 23, June 17, 1920.)

No. 38,382. Protest 931,382 of Rubber Association of America et al. against assessment of duty by the collector of customs at New York; reversed in part. Board of United States General Appraisers.

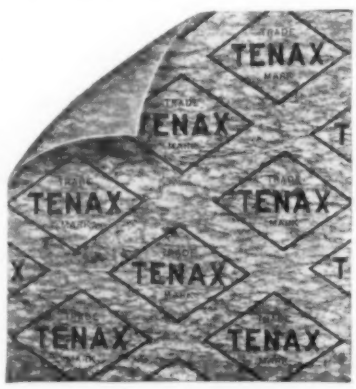
GUM.—Certain gums invoiced as: crude gum chicle, chicle, Colombia gum, cauchillo, sande, gum colombiana, goma tousle, crude chicle, goma sande, colombiana, and goma chicle, were assessed at 15 cents a pound, as if they were chicle, under the similitude clause of paragraph 386 of the Tariff Act of 1913. Held that they are not similar in material, quality, or texture to the chicle provided for in paragraph 36, and should be classified as non-enumerated unmanufactured articles. (Treasury Decisions. Vol. 38, No. 16, April 29, 1920.)

CAUCHILLO GUMS.—The Assistant Secretary of the Treasury on May 12, 1920, called upon the Assistant Attorney General to appeal to the United States Court of Customs Appeals against the decision in No. 38,382. (Treasury Decisions. Vol. 38, No. 19, May 27, 1920.)

UNITED STATES *vs.* AMERICAN CHICLE CO. (No. 2,014).—United States Court of Customs Appeals, March 24, 1920. Decision of Board of United States General Appraisers (No. 38,152) affirmed. CRUDE CHICLE.—Chicle conveyed to Canada from Mexico and there reduced to small particles and repacked, has not been advanced in quality or value; it therefore pays only 15 cents a pound duty. (Treasury Decisions. Vol. 38, No. 14, April 15, 1920.)

"TENAX" ASBESTOS SHEET PACKING.

To enable shop owners to make their own gaskets, one manufacturer has provided asbestos packing pressed in sheets 50 by 50 inches, ranging in thickness from 1/32 to ⅛-inch, besides one special 1/64-inch sheet which is black graphited. The standard color is blue and is known as "the original blue sheet." "Tenax" compressed asbestos sheet packing is intended for use on the engines of automobiles, gas engines, trucks, tractors, etc. It is claimed for it that it will resist extremely hot temperatures, trims easily, requires no following up, and does not squeeze out of the joint or "fry" under high temperatures. (Advance Packing & Supply Co., 78 East Lake street, Chicago, Illinois.)

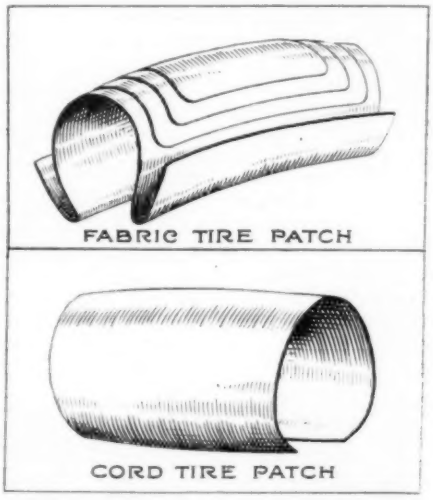


"TENAX" ASBESTOS PACKING.

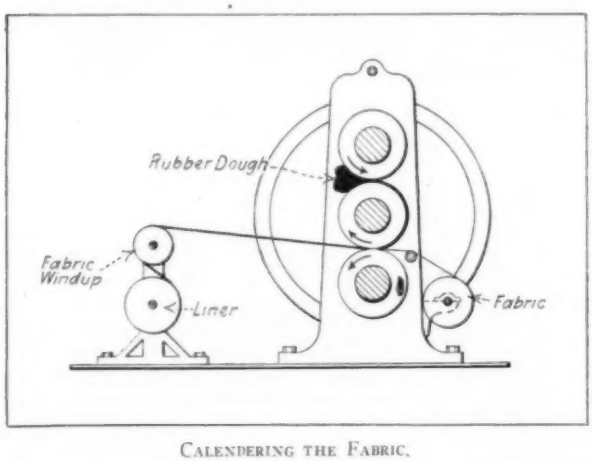
The Manufacture of Blow-Out Patches.

By Arthur C. Squires.

BLOW-OUT PATCHES are emergency accessories that are always carried in the repair kit of every cautious motorist who anticipates the time, that usually comes unexpectedly, when the need is urgent. They are intended for an emergency repair and a protection to the inner tube in case of a blow-out or fabric break, and may be easily and quickly applied on the road.



Blow-out patches are made by tire and other rubber manufacturers specializing in tire sundries. There are two types of inside blow-out patches, the fabric and the cord. The former is intended for fabric tires and is provided with flaps that extend outwardly between the beads and the rim, thereby holding the patch firmly in place. The cord patch is designed for cord tires,



CALENDERING THE FABRIC.

although it may be used in a fabric tire repair. The cost of this patch, however, does not warrant such use, as a fabric casing break tends to increase, and therefore should be properly repaired and vulcanized. An injury to a cord casing does not have a tendency to grow larger, hence the cord patch can be applied with cold patching cement and may wear as long as the tire. However, a vulcanized repair is undoubtedly more permanent.

While the process of making inside blow-out patches varies somewhat among manufacturers, fabric patches are usually built up from four superposed plies of bias frictioned fabric of equal width, each ply being stepped down longitudinally. The cord patch is built up from bias cord fabric in the same way and the edges of both types are tapered to a fine edge.

The manufacture of blow-out patches includes the wrapped and molded processes, the former being the most commonly used method and is briefly described as follows: A roll of 13-ounce cotton duck, 36 inches wide and about 50 yards in length, is thoroughly dried to free it from moisture. A length of pipe is passed through the center of the roll, which is then placed horizontally in bearings, and the free end of the fabric is passed between the middle and lower roll of the calender and fastened to the stock shell. Previously, the rubber stock is compounded and mixed on a two-roll mill. The formula commonly used consists of:

Smoked sheet	22	pounds
Whiting	12	pounds
Litharge	3	pounds
Sulphur	1½	pounds

CALENDERING.

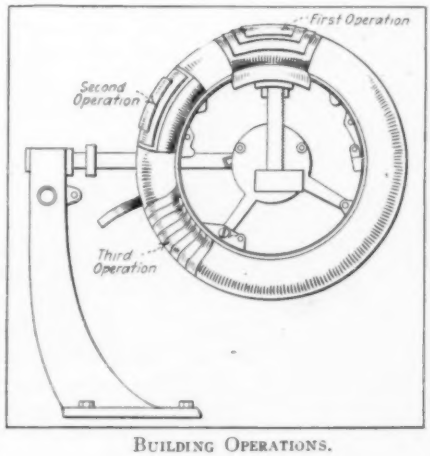
The calendering is done on a three-roll calender. After the rubber dough has been warmed up on a special warming mill, it is placed between the upper and middle rolls of the calender, and when the calender is started and adjusted, the rubber passes in a thin sheet on the middle roll which is somewhat hotter than the top roll. This sheet is transferred by pressure of the rolls to the fabric that passed between the middle and lower rolls and the frictioned-fabric is then wound up on the stock shell with a cotton liner between the rubber surfaces to prevent their sticking together. The speed of the bottom roll is somewhat slower than the other two for the purpose of forcing or frictioning the rubber through the interstices of the fabric.

CUTTING.

The roll of calendered fabric is then mounted at one end of the cutting table and a length of stock is unrolled and laid on the table, meanwhile, the liner is stripped off and wound up for further use. The stock is then cut on the bias according to the sizes required.

ASSEMBLING.

The next operation is assembling or building up the patches. This is done on a hollow metal core that conforms in section to the shape of the tire casing in which the patch is intended to be used. A coating of cement is first applied to the core that is mounted on any ordinary tire building stand. The next step consists in applying the largest ply of fabric to the core, allowing the rim-flaps to extend downward and over-hang the inside periphery of the core. This first-ply is given a coating of cement and the second ply is laid on the first, and so on until the four-ply patch is assembled. Each ply, however, should be rolled down smoothly and all air pockets between the plies carefully removed. As many patches as the circumference



BUILDING OPERATIONS.

of the core will accommodate are built up in this way, when the flaps are dusted with soapstone and turned back against the body of the patch and the cloth wrapping applied.

VULCANIZING.

The assembled, cloth-wrapped patches are now ready for vulcanizing or curing, as it is commonly called. This is done in a horizontal, open steam vulcanizer. The cores, with their assembled and cloth-wrapped patches, are hung on stationary metal rims within the vulcanizer and about 38 pounds of steam pressure applied for 38 minutes.

After the cloth wrapping is unwound the patches are stripped from the core and dusted with soapstone, when they are ready to be marked and packed.

ZWEBELL'S HINTS TO REPAIRMEN.

THE NON-SKID IMPRESSION PAD.

The impression pad is used for retaining the non-skid pattern on tires or for reproducing it on tread sections, etc. When the non-skid pattern is being replaced, soapstone can be used to fill with and good work obtained. However, there is no pressure obtained by the use of soapstone, and for this reason the impression pad is found to be the best.

(1.) Pads are made to fit the molds, and are usually the length of the mold.

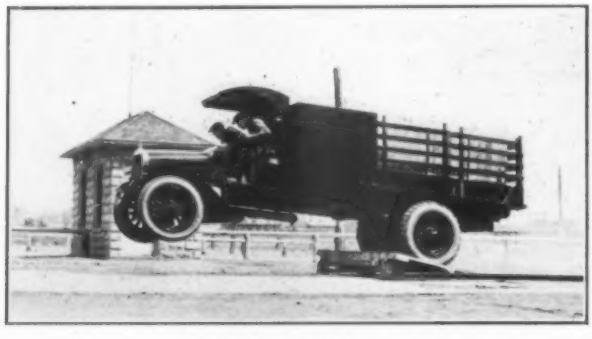
(2.) When applying the pad on the tire, place it beyond the point of injury, and where the non-skid design is in first-class condition. The pad can be tied on so it will adhere and not slip.

(3.) When making an impression pad, make it right. Take a ply of reclaimed fabric of the proper length and width. Buff and cement the fabric and place on this two layers of 1/16-inch tread gum, or more, if the non-skid is deep, and then cure. The result is a strong non-chipable pad that will last for seventy-five cures or more without losing the impression.

(4.) Impression pads are inexpensive and better when reclaimed fabric is used. Scrap, waste or dirty gum is used between the fabric and the last ply of gum coming in contact with the tire.

PNEUMATIC TRUCK TIRES WITHSTAND SEVERE TESTS.

W. V. Logan of the United States Tire Co., in a paper read before the metropolitan section of the Society of Automotive Engineers in New York, May 12, 1920, on the development of the pneumatic truck tire, told of some interesting experiments that have been made. The story of the working out of the idea of applying pneumatic tires to heavy trucks since it was first formed in 1909, with the enumeration of the advantages to be gained,



THE JUMPING TEST.

formed the main portion of the address. At the close, Mr. Logan showed in moving pictures exactly what takes place in a solid or a pneumatic truck tire when subjected to excessive shocks and strains. The tests were made at the truck tire factory of the United States Rubber Co.

All the trucks, except the 5-ton truck in the gutter jump, were loaded beyond their rated capacity; the speed was between 17 and 20 miles an hour. The platform from which they jumped was 1½ feet high. The deflection of the tires as they struck the ground was 50 per cent of their cross-section diameter.

The jumping truck weighted 10,800 pounds loaded, and the tires used were six-inch in front and eight-inch in rear. The same truck took gutter and curbstone tests as well as the jump tests. In eight jumps there was not a blow-out nor tire trouble of any kind, and after the tests the four tires were taken off and dissected but not a break nor a scratch was found on the inside of the casings. Moreover, after eight or nine jumps had been made, all on the same identical spot, absolutely no harm was done to the concrete road. It was found that the impact of the pneumatic tired truck on the surface was two-thirds less than the impact of a solid tired truck.

DEVELOPMENT OF THE SIX-WHEEL TRUCK.

P. W. Litchfield, vice-president and factory manager of The Goodyear Tire & Rubber Co., expressed his views on tires and their future at the dinner given by the company to the Cleveland and Detroit sections of the Society of Automotive Engineers at Akron, Ohio, in May last. After an interesting review of the history of transportation, in which he showed how street-cars must give way to motor buses, and prophesied

INSTEAD OF TWO GIANT PNEUMATIC TIRES, EACH WEIGHING 398 POUNDS, THE TANDEM AXLE CONSTRUCTION PERMITS THE USE OF FOUR 40 BY 8 PNEUMATIC TIRES, EACH WEIGHING ONLY 119½ POUNDS.

the disappearance of railroads, he turned to the question of truck tires. He believes that the pneumatic-tired truck and the long-distance truck can handle in the future the passenger and freight business, now managed entirely by the railroads. Larger loads and longer distances make possible an enormous increase in the volume of the motor truck business, but the use of the truck is very limited if solid tires are used, as greater speed and carrying capacity are obtained with pneumatic tires. Larger units must be employed; 3-ton and 5-ton trucks have been used and the tires for 3-ton sizes are being rapidly changed to pneumatic equipment. Largely as an experiment the Akron-to-Boston express was started, and it proved an excellent tire-testing experiment. It was learned that while it is not difficult to make 12, possibly 15 and perhaps 20-inch tires, it is questionable whether they are the tires for this service. When considering 10 and 12-ton trucks it was found that the truck body and center of gravity were too high. The remedy was to use multiple wheels, that is, more than four, say six; four wheels have proved inefficient on European railroad cars as compared with American freight cars, and that holds good for motor trucks also. The truck should be on tandem wheels and not on twin tires on the same wheel and the riding quality and carrying conditions will be better. By putting the extra wheels under the rear end of the truck body the damage to tires is avoided, which follows with large single tires, because tires are distorted with a big body overhang, and more traction is obtained with a four-wheel drive.

War Department Specifications for Mechanical Rubber Goods—II.

WAR DEPARTMENT SPECIFICATIONS No. 333-1-1, referred to in the following, were published in THE INDIA RUBBER WORLD, January 1, 1920:

COTTON RUBBER-LINED FIRE HOSE.

War Department Specification No. 333-1-7—June 5, 1919.

GENERAL.—(*a*) This specification covers the requirements for cotton rubber-lined fire hose.

(*b*) See War Department Specification No. 333-1-1, headed General Specification for Mechanical Rubber Goods[1], which is made a part hereof, except in such cases as the provisions below directly conflict. In such cases the word and meaning of this specification will govern.

CONSTRUCTION.—See General Specifications and following table.

(*a*) Shall be made of single or double jacketed cotton cover as may be directed and a rubber lining.

(*b*) The cotton cover shall be circular woven, seamless, or one ply or two separate plies as may be specified. Free from foreign matter and imperfections. The filling shall be a high ply yarn and the warp a lower ply yarn.

(*c*) The rubber lining shall be uniform throughout, consisting of not less than three calendered sheets lapped at the seam into one solid body, properly vulcanized. It shall be as free from corrugations as is consistent with good practice and not less than 0.058-inch in thickness for 2½-inch hose and not less than 0.049-inch for 1½-inch throughout, exclusive of backing.

(*d*) FITTINGS.—Each length of hose shall be properly fitted into brass couplings of the following composition:

	Per Cent.
Copper, not less than	83
Tin, not less than	5
Zinc, not more than	7
Lead, not more than	3

NOTE.—0.5 per cent charcoal iron may be used if desired.

All surfaces shall be machine finished except the corrugations in the tail parts. The thickness of metal shall not be less than 5/32-inch at any one point. The diameter of the waterway shall be as near 2½ inches as possible and not less than 2¼ inches, being determined by keeping the thickness of metal between the bottom of thread and surface of the waterway not less than 5/32-inch. Each 2½-inch coupling shall be provided with two expansion rings, which shall have smooth, rounded edges and shall be not less than 0.050 and not over 0.058-inch in thickness; not less than 1½ inches in length and at least ⅛-inch shorter than the tailpiece. Each 1½-inch coupling shall be provided with two expansion rings of suitable size to guarantee satisfactory performance. Two spanner lugs shall be provided 9/16-inch in diameter and 9/16-inch in length for 2½-inch hose and ½-inch in diameter and 7/16-inch in length for 1½-inch hose, both on the swivel and the male end, and shall conform to dimensions, marked with manufacturer's name, month and year of manufacture, and the words "U. S. A."

(*e*) THREADS.—Shall be standard iron-pipe size for 1½-inch hose and "National Standard" fire-hose thread for 2½-inch size unless otherwise specified in the proposal or order.

(*f*) GASKETS.—Three shall be provided with each coupling, one in the swivel and one in each end underneath expansion rings; all exactly fitted, 3/16-inch in thickness, and of the same composition as the rubber tube.

BRANDING.—See General Specifications.

(*a*) Stenciled in black with indelible ink, letters at least 1 inch high in two places on each length 2 feet from the couplings, with the words "U. S. A. FIRE," manufacturer's name, and date.

MATERIAL.—See General Specifications.

(*a*) Lining and washers shall contain not less than 35 per cent of fine Pará, nor more than 4 per cent sulphur, with the remainder suitable dry inorganic mineral fillers. The uses of reclaimed rubber or rubber substitutes will not be permitted.

INSPECTION.—See General Specifications.

(*a*) From each shipment of 20 lengths or less the inspector may select one length at random, and cut from it a 1-foot section for tests.

TESTS.—See General Specifications and following table.

(*a*) Each length of hose with couplings attached shall be subjected to pressure test. Twist shall be in a direction to tighten the coupling. Hose shall not leak, sweat, nor rupture the threads of the cotton cover.

(*b*) For physical tests an 8-inch section shall be cut from sample after burst.

(*c*) Friction test to be conducted on a specimen 1½ inches long.

(*d*) Samples after being subjected to a dry heat of 158 degrees F., plus or minus 2 degrees, for 96 hours must have a tensile strength of at least 900 pounds per square inch.

(*e*) Chemical test shall be made on the tube properly separated from the cover, buffed free of backing and properly prepared. The acetone, alcoholic potash, and chloroform extract, ash, and total sulphur together shall not exceed 67 per cent by weight of the total compound. Free sulphur must not exceed 1.25 per cent by weight of the total compound. The acetone extract shall not exceed 4 per cent. The alcoholic potash shall not exceed 1.5 per cent. The chloroform extract must not exceed 2 per cent. The total sulphur, exclusive of barytes, must not exceed 4 per cent, and the ash shall not be greater than 57 nor less than 50 per cent by weight of the total compound.

(*f*) Elongation and twist measurements shall start with hose filled with water at 10 pounds' pressure.

(*g*) One length from every 10 shall be given the kinking test, which shall be conducted by kinking the hose 18 inches from one end by tying the coupling back against the hose.

(*h*) A 3-foot section shall be cut from at least one length in every sixty 50-foot lengths for bursting test.

TABLE.

	Size, Inches.		
	1½	2¼	2½
Number of jackets	Single.	Single.	Double.
Tolerance I. D., plus or minus...inches	1/32	3/64	3/64
Length in feet	50	50	50
Weight per length including couplings:			
Minimum ...lbs.	21	40	..
Maximum ...lbs.	..	..	70
Hydrostatic tests:			
Testing pressure,[2] every length, minimum..lbs.	300	300	400
Rise from table,[2] maximum...inches	7	4	None.
Elongation,[2] maximum...per cent	13	13	9
Distortion from straight line,[2] maximum, inches	20	20	20
Twist, degrees per foot,[2] maximum	50.4	25	15
Kinking test, minimum...lbs.	300	300	350
Burst test (3-foot sample lying straight, or curved to 27-inch radius), minimum..lbs.	500	500	600
Friction, minimum...lbs.	12	12	12
Tensile:			
Before aging, minimum...lbs.	1,600	1,600	1,600
After aging, minimum...lbs.	900	900	900
Ultimate elongation, minimum...inches	2-12	2-12	2-12
Permanent set:			
Stretch 10 minutes, then release, minimum ...inches	2-10	2-10	2-10
Per cent set after 10 minutes' rest, maximum	25	25	25

GASOLINE HOSE.

War Department Specification No. 333-1-8—June 5, 1919.

GENERAL.—(*a*) This specification covers the requirements for hose to be used in conveying gasoline.

(*b*) See War Department Specification No. 333-1-1, headed General Specification for Mechanical Rubber Goods[1], which is made a part hereof, except in such cases as the provisions below directly conflict. In such cases the word and meaning of this specification will govern.

CONSTRUCTION.—See General Specifications and following Table II.

(*a*) Tube when made from rubber sheet shall consist of at least two complete turns, reinforced at lap into one solid body.

(*b*) Hose to be made of braided or fabric plies.

(*c*) Washers to be made of leather 1/16-inch in thickness.

BRANDING.—See General Specifications.

(*a*) Use the word "Gasoline."

MATERIAL.—See General Specifications and following Tables I and II.

(*a*) Tube, cover and friction, shall contain not less than 25 per cent of fine Pará, and not more than 1 per cent free sulphur.

INSPECTION.—See General Specifications.

(*a*) Inspector may cut at random a three-foot section for each shipment of 1,000 feet or less.

TESTS.—See General Specifications and following Table II.

(*a*) A length of hose with couplings attached after having been filled with gasoline for two hours shall withstand a pressure test as in Table II.

[1] See "THE INDIA RUBBER WORLD," January 1, 1920, page 214.
[2] Tests shall be conducted on each length.

(*b*) FLEXIBILITY.—By flexibility is meant ability to bend without kinking. When hose of internal diameter (Y) is bent around a cylinder having diameter equal to (X) times the external diameter of hose as in the following table, the external diameter of hose shall not increase or diminish by more than 10 per cent.

TABLE I.

Internal diameter:	Less than ½	½ to ¾-inch	1 to 1½-inch	1½ to above—
(Y) .....inches	½	¾	1½	1½
(X)	8	12	14	16

(*c*) DRY HEAT.—A 3-inch piece of hose shall be subjected to dry heat at 132 degrees C. for two hours, and after cooling it shall not be tacky nor show any tendency to crack.

(*d*) PERMEABILITY.—(The specific gravity of the gasoline used in this test should be between 0.710 and 0.725 at 15.5 degrees C.; 65 per cent of it must distill over at 100 degrees C. from a distillation flask when the bulb of the thermometer is just below the side tube.) A 14-inch length of the hose is held vertically and plugged at the bottom.

The upper end is fitted with a glass tube about 18 inches long. The hose so arranged is filled with gasoline to a head of 12 inches above the top of the acting length of the hose. The acting length of the rubber hose is 12 inches. The upper end of the glass tube is loosely closed with a cork.

During the first 24 hours the level of the gasoline will fall comparatively rapidly. The loss of gasoline is made good by frequent additions from a known volume of gasoline, care being taken that the level of the gasoline in the glass tube does not fall at any time by more than 3 inches. This test is to last for 72 hours, and the loss of gasoline during the third 24 hours shall not exceed 100 c. c. per square foot of the original internal surface of the hose.

(*e*) IMMERSION IN GASOLINE—A 3-inch piece in the hose is boiled for one hour (using a reflux condenser) in gasoline similar to that used for the permeability test. The gasoline is allowed to cool down. Twenty-four hours later the test piece is removed from the gasoline and examined without delay, as follows:

The internal diameter at the point of greatest constriction is measured by means of rod gages. From this measurement the area of the bore is calculated. It shall not differ from the original by more than 25 per cent.

The test piece is then cut longitudinally into halves, and the adhesion between rubber and cotton carefully examined. The adhesion shall be of such a character that the rubber can only be stripped from the cotton by hand with difficulty.

(*f*) IMMERSION IN OIL.—A 3-inch piece of the hose is immersed in medium gas-engine cylinder oil at a temperature of 100 degrees C. for 8 hours, and for a further period of 24 hours at ordinary temperature. The oil is then wiped from the surface of the hose. The decrease of internal diameter shall be less than 10 per cent.

The flexibility and elasticity of the rubber shall not be diminished and there shall be no tendency of the rubber to separate from the cotton.

TABLE II.

Size.	Up to ½ Inch Inclusive.	Over ½ to ⅝ Inch, Inclusive.	Over ⅝ to 1 Inch, Inclusive.	Over 1 to 1½ Inches, Inclusive.	Over 1½ to 2 Inches, Inclusive.	Over 2 Inches.
Tolerance, plus or minus..inch	1/16	1/16	1/16	1/16	1/16	1/16
Thickness:						
Tube, minimum ....inch	1/16	1/16	1/16	1/16	1/16	1/16
Cover, minimum....inch	3/64	3/64	3/64	3/64	3/64	3/64
Fabric, plies, minimum.....	2	2	3	3	4	4
Hydrostatic burst after gasoline immersion minimum.lbs.	160	140	140	120	100	80

PNEUMATIC HOSE.

War Department Specification No. 333-1-10—June 5, 1919.

(A) ROCK-DRILL HOSE. (B) PNEUMATIC-TOOL HOSE.

GENERAL.—(*a*) This specification covers the requirements for pneumatic-tool and rock-drill hose for conveying air under pressure.

(*b*) See War Department Specification No. 333-1-1, headed General Specification for Mechanical Rubber Goods[1], which is made a part hereof, except in such cases as the provisions below directly conflict. In such cases the words and meaning of this specification will govern.

CONSTRUCTION.—See General Specifications.

(*a*) Dimensions: See the following table.

(*b*) The fabric plies of pneumatic tool hose shall be of sheeting or a plain weave fabric.

(*c*) The fabric plies of rock-drill hose shall be of duck.

BRANDING.—See General Specifications.

(*a*) Use word "Pneumatic" on pneumatic hose.

(*b*) Use words "Rock Drill" on rock drill hose.

MATERIAL.—See General Specifications.

INSPECTION.—See General Specifications.

TESTS.—See General Specifications and following table.

(*a*) When test pieces are stretched 2 to 9 inches at the rate of 20 inches per minute, the stress upon the tube shall be at least 900 pounds, that upon the cover at least 700 pounds per square inch.

TABLE I.

	Pneumatic. Size, Inches.		Rock Drill. Size, Inches.	
Outside diameter.....inches	1	1 1/16	1 1/16	1 1/16
Tolerances:				
I. D., plus or minus.....inch	1/64	1/64	1/64	1/64
O. D., plus or minus.....inch	1/32	1/32	1/32	1/32
Thickness:				
Tube, minimum.....inch	3/32	3/32	3/32	3/32
Cover, minimum.....inch	3/32	3/32	3/32	3/32
Fabric, plies, minimum.....	5	7	4	5
Hydrostatic:				
Coupling test, minimum.....lbs.	250	250	250	250
Burst test, minimum.....lbs.	600	600	600	600
Friction, minimum.....lbs.	12	12	20	20
Tensile:				
Tube, minimum.....lbs.	1,500	1,500	1,500	1,500
Cover, minimum.....lbs.	1,300	1,300	1,300	1,300
Ultimate elongation:				
Tube and cover, minimum....inches	2-11	2-11	2-11	2-11
Permanent set:				
Tube and cover, stretch for 10 minutes, then increase minimum.inches	2- 9	2- 9	2- 9	2- 9
Per cent set after 10 minutes' rest, maximum	25	25	25	25

SUCTION HOSE.

War Department Specification No. 333-1-12—June 5, 1919.

GENERAL.—(*a*) This specification covers the requirements for hose used for the removal of water by means of suction pumps.

(*b*) See War Department Specification No. 333-1-1, headed General Specification for Mechanical Rubber Goods[1], which is made a part hereof, except in such cases as the provisions below directly conflict. In such cases the word and meaning of this specification will govern.

CONSTRUCTION.—See General Specifications.

(*a*) Dimensions: See table following.

(*b*) Smooth bore.—Shall be made with an inner rubber tube, a helix of wire with rubber filling between the spirals; a second layer of rubber; cotton canvas layers; and an outer rubber cover.

Rough bore.—Shall be made with an inner helix of wire covered with a layer of cotton canvas; the spaces between the wire filled with rubber in such a way that the cotton canvas is worked inward, making the passage through the hose as smooth as possible; a layer of rubber; cotton canvas layers; and an outer rubber cover.

(*c*) Suction strainers shall be furnished only when specifically called for in the proposal.

(*d*) The ends of each length shall be capped with the same rubber compound as used in the tube.

(*e*) The rough bore helix shall be of heavily galvanized flat iron wire, with rounded edges; the smooth bore helix shall be of heavily galvanized or copperized flat or round wire; each complying with table. The spacing between the adjacent wires shall be filled with rubber strips of the proper thickness and same quality of rubber compound as used for the tube. The rubber strips shall be of sufficient thickness so that when the hose is made up complete, the outside of the hose shall not show appreciable corrugations. The helix shall end at such a distance from the end of the hose that it will extend over the tailpiece of the coupling about 1 inch when the hose is trimmed and the coupling attached. The end shall be properly secured and the space thus left for the attachment of the coupling shall be filled with well-frictioned cotton canvas layers of the same material as is used in the body of the hose. The fabric placed under the wire at the end of the rough bore hose shall not extend within the hose more than ¾-inch beyond the end of the shank of coupling.

BRANDING.—See General Specifications.

(*a*) Use word "Suction."

MATERIAL.—See General Specifications and following table.

(*a*) Tube, cover, filler, layer, washers and friction shall be properly vulcanized and contain not less than 35 per cent by weight of fine Pará rubber; not more than 3 per cent by weight of sulphur, with the remainder suitable dry inorganic mineral fillers.

INSPECTION.—See General Specifications.

(*a*) With each lot of 50 lengths or less the contractor shall

[1] See "THE INDIA RUBBER WORLD," January 1, 1920, page 214.

TABLE.

	SIZE, INCHES.									
	SMOOTH BORE. 1½	ROUGH BORE. 1½	SMOOTH BORE. 2	ROUGH BORE. 2	SMOOTH BORE. 2½	ROUGH BORE. 2½	SMOOTH BORE. 3	ROUGH BORE. 3	SMOOTH BORE. 4	ROUGH BORE. 4
Outside diameter, plus or minus } Soft ends } .....inches	2 7/16	2 7/16	2 11/16	2 11/16	3 3/16	3 3/16	4	3 7/16	5 1/16	4 11/16
Tolerance (I. D.) ..... } .....inches	1/64	1/64	1/64	1/64	1/64	1/64	1/64	1/64	1/64	1/64
Tolerance (O. D.) plus or minus.....inches	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
Length, as specified in proposal.										
Thickness:										
Tube, minimum.....inches	1/16	....	1/16	....	1/16	....	1/16	....	1/16	....
Cover, minimum.....inches	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
Rubber layer, minimum.....inches	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
Rubber filler, minimum.....inches	1/8	1/16	1/8	1/16	5/32	1/8	1/8	1/8	1/8	1/8
Washers, minimum.....inches	1/8	1/8	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Wire, size, minimum.....inches	0.120	¼×1/16	0.120	¼×1/16	0.148	¼×1/8	3/16×1/8	¼×1/8	½×1/8	½×1/8
Spacing, maximum.....inches	½	½	½	½	3/8	3/8	¼	¼	1	1
Fabric, plies, minimum.....	4	4	4	4	4	4	4	4	5	5
Weight per square yard, minimum.....ounces	14.4	14.4	14.4	14.4	14.4	14.4	18.0	18.0	18.0	18.0
Hydrostatic coupling, test pressure, minimum...lbs.	125	125	125	125	125	125	125	125	125	125
Friction, minimum.....lbs.	15	15	15	15	15	15	15	15	15	15
Tensile:										
Tube, minimum.....lbs.	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Cover, minimum.....lbs.	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300
After accelerated aging:										
Tube, minimum.....lbs.	900	900	900	900	900	900	900	900	900	900
Cover, minimum.....lbs.	800	800	800	800	800	800	800	800	800	800
Ultimate elongation:										
Tube and cover, minimum.....inches	2-11	2-11	2-11	2-11	2-11	2-11	2-11	2-11	2-11	2-11
Permanent set:										
Set, stretch for 10 minutes, then release, minimum .....inches	2-10	2-10	2-10	2-10	2-10	2-10	2-10	2-10	2-10	2-10
Per cent set after 10 minutes' rest, maximum....	25	25	25	25	25	25	25	25	25	25

[1]See "THE INDIA RUBBER WORLD," January 1, 1920, page 214.

furnish a section of hose 12 inches long, which he shall guarantee to be made of the same material and the same construction (without wire), as the hose delivered.

TESTS.—See General Specifications and above table.

(*a*) Test pieces of tube and cover shall be subjected to an accelerated aging test of 96 hours in dry heat at 158 degrees, plus or minus 2 degrees F.

WATER HOSE.

War Department Specification No. 333-1-14—June 5, 1919.

GENERAL.—(*a*) This specification covers the requirements for hose to be used in conveying cold water.

(*b*) See War Department Specification No. 333-1-1, headed General Specification for Mechanical Rubber Goods[1], which is made a part hereof, except in such cases as the provisions below directly conflict. In such cases the word and meaning of this specification will govern.

CONSTRUCTION.—See General Specifications.

(*a*) Dimensions to conform with the following table.

BRANDING.—See General Specifications.

(*a*) Use the word "Water."

MATERIAL.—See General Specifications.

(*a*) Tube, cover, washer, and friction shall contain not less than 35 per cent fine Pará rubber, not more than 3 per cent of sulphur; the remainder shall consist of suitable dry inorganic mineral fillers.

INSPECTION.—See General Specifications.

TESTS.—See General Specifications and following table.

(*a*) Test pieces of tube and cover shall be subjected to an accelerated aging test of 96 hours in dry heat at 158 degrees F., plus or minus 2 degrees.

TABLE I.

	SIZE.				
	¾-INCH.	1 INCH.	1½ INCHES.	2 INCHES.	3 INCHES.
Tolerance, inside diameter, plus or minus .....inch	1/64	1/64	1/32	1/32	1/32
Outside diameter.....inches	1 7/16	1½	2	2 7/16	3¼
Tolerance, plus or minus..inch	1/32	1/32	3/64	3/64	3/64
Thicknes:					
Tube, minimum.....inch	1/16	1/16	1/16	1/16	3/32
Cover, minimum.....inch	3/64	3/64	3/64	3/64	1/16
Fabric plies, minimum.....inches	3	4	4	4	5
Hydrostatic:					
Coupling test, minimum.....lbs.	150	150	150	150	150
Burst test, minimum.....lbs.	500	500	400	300	225
Friction:					
Cover and plies, minimum..lbs	13	13	13	13	13
Tubes and plies, minimum..lbs.	13	13	13	13	13
Adhesion between plies, minimum .....lbs.	15	15	15	15	15
Tensile:					
Tube, minimum.....lbs.	1,500	1,500	1,500	1,500	1,500
Cover, minimum.....lbs.	1,300	1,300	1,300	1,300	1,300
After accelerated aging—					
Tube .....lbs.	900	900	900	900	900
Cover .....lbs.	800	800	800	800	800
Ultimate elongation:					
Tube and cover, minimum, inches	2-11	2-11	2-11	2-11	2-11
Permanent set, tube and cover:					
Stretch for 10 minutes, then release, minimum.....inches	2-10	2-10	2-10	2-10	2-10
Set per cent after 10 minutes, maximum	25	25	25	25	25

[1]See "THE INDIA RUBBER WORLD," January 1, 1920, page 214.

GUTTA PERCHA IN THE PHILIPPINES.

The Honorable Dionisio Jakosalem, Secretary of the Department of Commerce and Communications of the Philippines, writing in regard to the exports of gutta percha from the Philippines, states that most of the gutta percha produced in the Philippines is exported through the ports of Jolo and Zamboanga to Singapore, from whence it goes to Europe. The product is thus wrongly credited to the Federated Malay States. His office is now conducting an investigation to find out why that product is not exported directly from Manila to the United States.

He points out that in 1915 the Philippine export of gutta percha amounted to 31,650 kilos, valued at 31,143 pesos, and in 1919 to 38,030 kilos, valued at 36,942 pesos. One thousand kilos equals a ton of 2,200 pounds, a peso equals 50 cents, United States currency. The Secretary believes that the volume of our export to the United States can be considerably increased through the employment of American buyers in the Philippines, with the establishment of a reliable market in the United States where direct shipments may be handled.

A while back, when the laying of another transpacific cable was under discussion, it was alleged that the necessary gutta percha for insulation could not be secured as Great Britain had control of the world's supply.

The supply of gutta percha that can be secured in the Philippines is incalculable. It is classed as a minor forest product and is brought in by members of the non-Christian tribe, who live in the forests, in small quantities when they are in need of funds. No systematic effort has been made to secure a larger supply and the competition among the Chinese traders for that which is produced is not very keen.

The Secretary also points out the existence of extensive areas for the cultivation of rubber plants which are available; and that great opportunities and ample government protection are offered American and foreign capital invested in the islands. (James I. Rafferty, Philippine Commercial Agency, New York City.)

TESTING MACHINES.[1]

A SURVEY of the types of testing machines used in various countries for testing textile materials divides them into two distinct classes: (1) constant increment of load; (2) constant increment of stretch.

The constant-increment-of-load machines apply the load by uniformly increasing the tension in very small increments. There are a few isolated cases in which the load is increased by appreciable amounts at stated intervals of time.

The constant-increment-of-stretch machines apply the load by stretching the material at a uniform rate, and because of their simplicity and rapidity of operation have found much favor with textile men both in this country and abroad.

The progress of testing-machine development in England, particularly during the war, is rather interesting. For a long time the two types of machines were in general use, but the constant-increment-of-stretch machine was the one most used. At the beginning of the war the problem of studying aircraft fabrics was given to the National Physical Laboratory, which has much the same relation to English industry as the Bureau of Standards has to American industry. In the study of such fabrics, it is extremely desirable that a machine be used that will give tests which do not involve machine characteristics. In this connection the Avery testing machine has been developed and the English Government insists that all aeronautical fabrics be tested on that particular machine.

The Avery machine is illustrated in Fig. 1. Its principle is not new, but the mechanical design is quite an improvement upon the Goodhand and Smith machines of this type. It consists briefly of a compound lever, having at one end of the system a shot container so arranged to allow of a uniform rate of inflow and at the other end a fabric clamp. The shot container is allowed to be uniformly increased in weight and the balance beam kept at zero by taking up the stretch of the sample. Provision is made to cut off the supply of shot at the time of breaking of sample. A spring balance interposed between the shot container and balance arm allows the increase of weight of the container to be quickly observed.

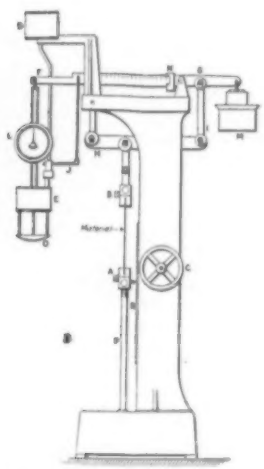


FIG. 1.—AVERY FABRIC-TESTING MACHINE.

A, LOWER GRIP; B, UPPER GRIP; C, HAND WHEEL; D, RESERVOIR; E, CAN; F, STEELYARD; G, STEELYARD PIVOT; H, LEVER; I, LINK; J, SWITCHING MECHANISM; L, SPRING BALANCE; M, CHECKING CAN; N, SLIDING POISE; O, RECEPTACLE; P, SCREW; R, VERTICAL SCALE.

It has been observed that within certain limits a change in the rate of loading produces practically no change in the physical properties of the material. The Avery machine is operated in accordance with specifications, within these limits and as a result the rate of loading varies with the kind of material being tested.

The development and use of this machine show a very careful study and consideration of the tensile properties of the material to be tested. The machine is theoretically very good, but the personal equation and time of operation is so large that its practical utility is questioned.

If the constant-increment-of-stretch machine had no machine characteristics, the results of tests on this type of machine would correspond with those obtained from a constant-increment-of-load machine, provided both were operated between the limits that define the relations of stretch, load and time, within which a change in the rate of load application produces only a slight change in properties.

The constant-increment-of-stretch machines may be classified according to the method of recording the load transmitted by the fabric: (1) inclination balance; (2) elastic system (such as a spring).

The rigidity of construction, ease of operation and so-called "dead weight" feature of the inclination balance type of head—together with the fact that springs were not, in the past, constructed to give constancy of operation—has caused the first type to be used universally in this country and in Germany. This type is illustrated in Fig. 2.

The theory and calibration of an inclination balance machine assumes a null method of weighing, that is, the balance or poise arm is at rest. This condition is entirely changed during the test by the inertia of a moving balance arm. The calibration is, therefore, not applicable to the machine as used. The error may be expressed as a function of the mass of the moving body multiplied by the acceleration. Obviously the acceleration changes with each different kind of material, shape and size of specimen, and speed of operation, and the total inertia component changes with the design and capacity of the machine. This is particularly emphasized in testing the same fabric on machines of different capacities; it is an established fact that results are different. From this it is readily seen that the results of tests of different fabrics on machines of the same capacity are influenced materially by the machine characteristics. All tests made on such machines include machine characteristics which vary with the variables of the test specimen, including nature of material, dimensions of test specimen, and rate of testing.

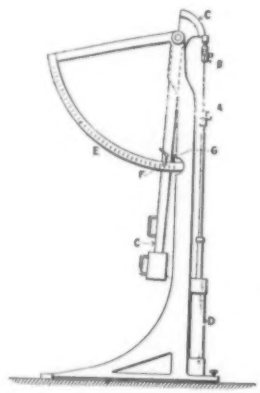


FIG. 2.—SCHOPPER FABRIC-TESTING MACHINES, INCLINATION BALANCE TYPE.

A, LOWER GRIP; B, UPPER GRIP; C, INCLINATION BALANCE; D, CYLINDER; E, RATCHET SCALE; F, FINGER; G, PAWL.

The use of this machine to check up deliveries is quite reasonable, for it is assumed that the machine characteristics are included in the specifications automatically and are constant for any one fabric and any one size and type of testing machine. Specifications based on tests made on this type of machine should specify the size, type and make of machine and rate of operation, as well as the specimen dimensions.

For investigational work, however, such as the comparison of the properties of different fabrics and the determination of the effect of varying the size of sample, it is clear that the results are very misleading if they include machine characteristics. The errors introduced become infinitesimally small as the speed of the moving arm approaches zero as a limit.

The use of an elastic system for recording the load transmitted eliminates the variables introduced by the inclination balance, provided the mechanical design is good, and it has the advantage of rapid and positive operation. Unfortunately, very little attention has been paid to the design of such machines and the variance introduced has caused them to be much in disfavor.

As the situation presents itself, there are two courses open for improvement and standardization of machines for testing textile materials:

[1] American Society for Testing Materials. Report of Sub-Committee III of Committee D-13.

First, the standardization of existing machines, which practically means only one make, one capacity and the same dimensions of the same moving parts; otherwise there will still exist confusion of results caused by the testing of materials on machines having different machine characteristics.

Second, the redesign of the principle of the recording head of the testing machine, so that the results obtained are independent of the machine. The second consideration is practically as easy to effect as the first, and has the advantage of being based on sound mechanics.

It may be asked why the Bureau of Standards has recommended that a particular make and size of inclination balance testing machine be used by the military departments during the present crisis. The military departments, such as the Quartermaster's Department and Signal Corps, were confronted with the problem of checking large deliveries immediately. Under these conditions the Bureau of Standards recommended one size of test specimen, one speed of operation, one make, and one capacity of inclination balance testing machine, regardless of whether any one condition of the test was fundamentally sound. The main object was to obtain uniform test methods at once.

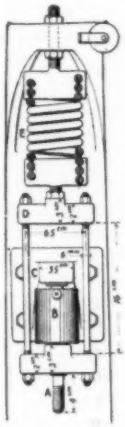


FIG. 3. HEAD OF FABRIC-TESTING-MACHINE, BUREAU OF STANDARDS.

A, CLAMP HERE; B, OIL DASH POT; C, DASH POT SUPPORT; D, DASH POT PISTON YOKE; E, SPRING.

For investigational work such as Committee D-13 contemplates, however, the testing machines used should be fundamentally correct.

The requirements of a testing machine are: (1) rigidity; (2) as nearly automatic operation as is possible; (3) recording head free from objectionable characteristics caused by (*a*) principle, (*b*) mechanical design.

The Bureau of Standards has been experimenting with a testing machine which as a whole has no value as a commercial machine, but which has shown itself to be reasonably constant and free from machine characteristics. It is constructed on the constant-increment-of-stretch principle and has a recording head of a suspended spiral spring and oil dash pot to take care of recoil. The head is illustrated in Fig. 3.

From the results obtained with this machine the Bureau is redesigning the present testing machines along these lines, with the addition of a temperature correcting device and an individual test result totalizer. The construction is rigid and simple, and the operation a little quicker and as automatic as that of any existing machines.

PROPOSED TENTATIVE SPECIFICATIONS FOR ADHESIVE INSULATING TAPE.[1]

Issued, 1920.

1. THESE SPECIFICATIONS cover a friction tape composed of cotton sheeting impregnated with an adhesive insulating compound.

I. MANUFACTURE.

2. The cotton sheeting layer shall be made from a sheeting evenly and firmly woven from good cotton, and as free from unsightly defects, dirt, knots, lumps, and irregularities of twist as is consistent with the best manufacturing practice. The threads shall run in straight lines without waving, so as to reduce to a minimum the raveling of the cloth when cut into tape.

3. The frictioning compound shall be an adhesive and insulating compound practically free from free sulphur (not over 0.05 per cent) or other substances which would have a deteriorating effect on copper or other metals or on the fabric.

4. The fabric shall be thoroughly impregnated and evenly covered on both sides with the frictioning compound.

5. The thickness of the tape shall be not less than 0.013 nor more than 0.017-inch; when measured with a rubber spring micrometer with 0.4-inch diameter foot.

6. The compound shall adhere firmly to the fabric and shall not pull away from the fabric so as to leave bare spots when adjacent thicknesses of the tape are separated.

II. PHYSICAL PROPERTIES AND TESTS.

7. When the tape is held before a strong light, the number of pin holes noted per linear yard of tape, ¾-inch wide, shall not exceed two.

8. The tensile strength per ¾-inch width shall be not less than 30 pounds. The initial distance between the jaws of the testing machine shall be 12 inches, and the rate of separation of the jaws shall be 20 inches per minute.

9. When wrapped on a clean, smooth copper rod and baked at 100 degrees C. for 16 hours, the compound shall not discolor the copper.

10. (*a*) The adhesion of the friction coat of compound between the plies shall be such that when a strip of tape 2 feet long and ¾-inch wide is taken from a roll and wound upon a 1-inch mandrel under tension of 7½ pounds at the rate of 30 inches per minute, a weight of 3 pounds shall not cause the plies to separate at a greater rate than 30 inches per minute.

(*b*) After a strip has been exposed to dry heat at 100 degrees C. for 18 hours and then cooled to room temperature, a test specimen shall withstand the test prescribed in the paragraph (*a*), except that the weight applied to unwind the tape shall be 1 pound instead of 3 pounds.

11. The test for dielectric strength shall be made as follows: The tape shall be spirally wound with one-third lap on a smooth metal rod, 1 inch in diameter, for a distance of 6 inches. Two inches in the center shall be covered with tin foil and bound down securely with tape, and an alternating potential of 1,000 volts, of a frequency of not over 65 cycles, shall be applied for five minutes between the metal rod and the tin foil without puncture.

12. One ½-pound roll for each 250 rolls shall be selected at random for the various tests. At least two feet of the outer layers shall be removed and one specimen taken for each test. If the tape fails in any one test, two additional specimens shall be taken. If the tape fails in either of these two additional tests, the material shall be rejected.

III. STANDARD WEIGHT, DIMENSIONS AND VARIATIONS.

13. The net weight of the tape, ¾-inch wide, shall be not less than 8 ounces per roll, exclusive of core, wrapping, and box.

14. The length of ¾-inch tape shall be not less than 55 yards per pound.

15. The width shall not vary from that specified more than ±0.03-inch.

IV. PACKING AND MARKING.

16. Each roll shall be wrapped in oiled paper or metal foil and enclosed in a suitable box. The wrapping shall be secure and shall thoroughly protect the contents.

17. Each box shall be marked with the name of the manufacturer or trade-mark, and the nominal width and weight of the tape.

V. INSPECTION.

18. The tape shall be tested and inspected within four weeks of date of delivery.

[1] American Society for Testing Materials, Committee D-11 on Rubber Products.

IN THE DUTCH EAST INDIES THERE ARE NOW ABOUT 12,000 MOTOR cars. Practically all imported since 1915 are of American manufacture. Previous to that Italian and French cars predominated and manufacturers in both countries are trying hard to regain the Dutch East Indian market.

What the Rubber Chemists Are Doing.

THE DETERMINATION OF SUBSTITUTE IN RUBBER.[1]

THE ACCURATE DETERMINATION of substitute in rubber articles is somewhat difficult. The method usually followed for an approximate test is as follows:

Part of the residue of the acetone extraction is heated for four hours in a flask with reflux condenser with 50 cc. of half-normal alcoholic potash solution. It is then filtered and the residue washed a few times with boiling alcohol and then with boiling water. Filtrate and washing liquid are evaporated to 15 cc., brought into a separating funnel, and after acidifying with hydrochloric acid, shaken with ether. The layer of ether is brought into a weighed flask, the ether is evaporated, the flask is dried at 100 degrees, and the increase of weight of the flask indicates the percentage of factis acids.

The determination takes place in the material previously extracted with acetone for reason that rubber resins are also partly saponifiable.[2] However, the substitute also dissolves partly in acetone, and this part varies for the different kinds of substitutes. The percentage found in the alcoholic potash extract is therefore too low for two reasons:

1. One part of the substitute is extracted with the acetone;
2. With the determination of the percentage of "factis acids" the real substitute is not actually expressed.

The second error is not to be avoided but can never be considerable. To correct the first one as much as possible it has been proposed to determine the other substances in the acetone extract, and to conclude therefrom what percentage of substitute is present in the acetone extract. The percentage of factis acids found as alcoholic potash extract increased by the percentage of substitute in the acetone extract, yields then the total substitute.

Although this method is in general use,[3] a doubt arose when repeatedly using it as to the accuracy of its results. For that reason an investigation was decided upon and tests were carried out on a number of rubber mixings with substitute of which the composition was entirely known.

The rubber used was *Hevea* crêpe with an acetone extract of three per cent. As vulcanizing does not appreciably change the acetone extract, the percentage of substitute could be calculated in the acetone extract of the vulcanized samples, the percentage of free sulphur being known.

DETERMINATION OF SUBSTITUTE IN VULCANIZED RUBBER.

After previous extraction with acetone the alcoholic potash extract was determined in two grams of the acetone extracted material. The quantity of substitute in the acetone extract was calculated. The results are shown in the following table:

DETERMINATION OF SUBSTITUTE IN VULCANIZED RUBBER.

No.	Substitute Added in Per Cent.	Acetone Extract.	Free Sulphur.	Substitute in Acetone Extract. A.	Alcoholic Potash Extract. B.	Total Substitute in Per Cent. A + B.
1	10, brown	7.6	2.0	3.8	0.6	4.4
2	10, white	8.2	3.9	2.5	1.2	3.7
3	3, brown	4.3	1.8	0.7	0.3	1.0
4	3, white	5.4	2.9	0.7	0.3	1.0
5	1, brown	3.8	1.9	0.1	0.3	0.4
6	1, white	4.0	2.3	0.0	0.1	0.1
7	10, brown	10.9	4.2	4.1 (4.0)*	0.7 (2.1)*†	†4.8 (6.1)*
8	10, white	10.6	5.2	2.8 (2.6)	2.1 (0.9)†	4.9 (3.5)
9	3, brown	8.4	4.4	1.1 (0.9)	0.2 (1.1)	1.3 (2.0)
10	3, white	9.1	5.2	1.0 (0.8)	0.5 (0.3)	1.5 (1.1)
11	1, brown	8.1	4.7	0.4 (0.2)	0.2 (0.4)	0.6 (0.6)
12	1, white	8.4	5.4	0.1 (0.1)	0.2 (0.3)	0.3 (0.4)
13	without any.....	7.8	4.9	0.0 (0.0)	0.0 (0.4)	0.0 (0.4)
14	25, brown	11.8	1.5	9.2	14.4	23.6

*The figures between parentheses were found in the mixes 7 to 13 after having been vulcanized for 3 hours.
†Sample very finely cut.

The figures in the third column indicate that the part of the substitute originally soluble in acetone retains this property after vulcanization. This is true if the samples are further vulcanized, evident from the figures obtained from Nos. 7 to 13 having been treated for three hours (figures between parentheses).

The last column proves the important fact that in many cases the determination of substitute yields figures which, according to the method followed up to the present, are considerably too low.

No better results were obtained with stronger alcoholic potash solution. Normal solution, instead of half-normal, caused a sample with 10 per cent substitute to yield only 0.8 per cent alcoholic potash solution extract. A small improvement was noted on very finely cutting the samples, but even then the results were low.

The low results were due to inability of the alcoholic potash solution to penetrate completely the acetone extracted sample. It was demonstrated experimentally that extraction with half-normal alcoholic potash after suitable swelling of the sample, whether vulcanized or unvulcanized, in benzene gives satisfactory results provided the following precautions are observed.

1. Filtrate and washing liquid must be evaporated as far as possible. The reason for this has to be looked for in the fact that otherwise benzene is not sufficiently expelled and that therefore extraction with ether by shaking is not complete (compare results under A and B).
2. Benzene must be present in excess, giving too low results when this is not the case (compare under D); 1 to 6 contain mineral fillers and could suffice with 15 cc. benzene; 7 to 13, which do not contain any mineral fillers, require at least 20 cc. benzene (compare results under B and C).
3. The time of swelling also has some influence. It appeared to be desirable to let the rubber stand over one night with benzene (compare results under E).

DETAILS OF IMPROVED METHOD.

Two grams of acetone-extracted rubber is covered with 20 cc. benzene and left for one night; 40 cc. alcoholic potash solution, 0.5 *N*, is added and the liquid is boiled for about four hours with a reflux condenser on a water bath. It is then filtered and the residue washed with boiling alcohol and then with boiling water. Filtrate and washing liquids are evaporated nearly to dryness (3 to 5 cc.), rinsed into a separating funnel, and after acidifying with hydrochloric acid, extracted with ether by repeated shaking. The layer of ether is brought into a weighed flask, the ether is evaporated and the flask dried at 100 degrees Centigrade.

The author's investigation further demonstrated that the determination of substitute in compounds of rubber which contain asphalt is not feasible by the above method.

OXIDATION OF THE EXTRACTED RUBBER IN CONNECTION WITH THE DETERMINATION OF THE SUBSTITUTE.

Some observations were made in close connection with the above determinations of substitute which will be dealt with here. The acetone-extracted rubber kept in stoppered bottles appeared to be considerably altered after a few weeks. It is remarkable that only the vulcanized rubber changed considerably. The change is probably due to oxidation of the rubber. During a previous investigation on the non-saponificability of resins[3] it appeared that the oxidation products of rubber are soluble in acetone and saponificable for the main part.

It was demonstrated that the presence of substitute does not influence this oxidation and from the analytic results it follows that *the determination of the factis acids must take place directly after the acetone extraction.*

[1] By P. Dekker. "Communications of the Netherland Government Institute for Advising the Rubber Trade and the Rubber Industry," Delft, Holland.
[2] "Communications of the Netherland Government Institute," Part II (1917), page 49.
[3] W. A. Caspari, "India Rubber Laboratory Practice" (London, 1914), page 123; F. W. Hinrichsen and K. Memmler, "Der Kautschuk und seine Prüfung" (Leipzig, 1910), page 129.

Samples containing old ground rubber as a filler yield, after the second extraction with acetone, a considerable quantity of extract with alcoholic potash solution. It is to be expected that old rubber often will be present in more or less oxidized condition, for which due allowance must be made in interpreting the results.

METHODS OF ANALYSIS.

RAPID DETERMINATION OF GOLDEN ANTIMONY IN RUBBER GOODS.

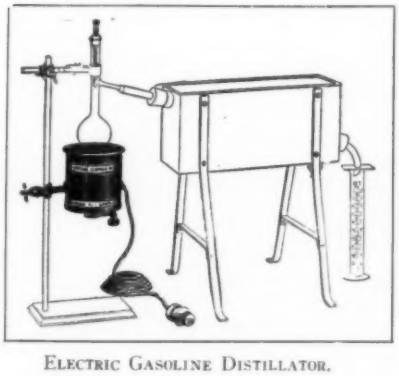
THE FOLLOWING METHOD for the rapid determination of antimony sulphide (golden antimony) in rubber goods and reclaimed rubbers is that of W. C. Schmitz,[1] given as translated in the "Journal of the Society of Chemical Industry," April 30, 1920, page 307A.

Two grams of the material is heated with 45 cc. of sulphuric acid in a 300-cc. Kjeldahl flask for 20 minutes; the cooled solution is then treated with 3 grams of ammonium persulphate and gently re-heated for 10 to 15 minutes longer after it has become colorless. The cooled liquid is diluted, almost neutralized, with ammonia regardless of any precipitate, feebly acidified with hydrochloric acid, and then saturated with hydrogen sulphide. The precipitate is dissolved in hydrochloric acid containing tartaric acid, and the filtrate, after expulsion of the hydrogen sulphide is titrated with potassium bromate using methyl orange as indicator. If the original material contains no iron the precipitation can be omitted; the colorless solution in sulphuric acid is heated for 20 minutes with 5 grams of potassium sulphate; a little potassium metabisulphite is introduced and the sulphur dioxide expelled by boiling; after repeating this operation twice more the liquid is diluted with 40 cc. of water, and 10 cc. of hydrochloric acid and a considerable quantity of tartaric acid added; titration is then effected as in the earlier process. The whole estimation needs two to four hours.

GASOLINE DISTILLATION METHODS.[2]

1. If the electric heater is used it is started and allowed to operate a few minutes first to warm it.

2. The condenser box is filled with water containing a liberal proportion of cracked ice.



ELECTRIC GASOLINE DISTILLATOR.

3. The charge of gasoline is measured into the Engler flask from the 100 cc. graduate. This graduate is used as a receiver for distillates without any drying. This procedure eliminates errors due to incorrect scaling of graduates and also avoids the creation of an apparent distillation loss due to the impossibility of draining the gasoline entirely from the graduate.

4. The graduate is placed under the lower end of the condenser tube so that the latter extends downward below the top of the graduate at least one inch. The condenser tube is so bent that the tip can touch the wall of the graduate on the side adjacent to the condenser box. This detail permits distillates to run down the side of the graduate and avoids disturbance of the meniscus caused by the falling of drops. The graduate is moved occasionally to permit the operator to ascertain that the speed of distillation is right, as indicated by the rate at which drops fall. The proper rate is from four cc. to five cc. per minute, which is approximately two drops a second. The top of the graduate is covered by a piece of fiber board, the condenser tube passing through an opening. This minimizes evaporation losses due to circulation of air through the graduate and also excludes any water that may drip down the outside of the condenser tube on account of condensation on the ice-cooled condenser box.

5. A boiling stone (a bit of unglazed porcelain or other porous material) is dropped into the gasoline in the Engler flask. The thermometer, equipped with a well-fitted cork and with its bulb covered with a thin film of absorbent cotton (preferably the long-fibered variety sold for surgical dressings), is fitted into the flask with the thermometer bulb just below the lower level of the side neck opening. The flask is connected with the condenser tube.

6. The electric heater is raised until the flask is in contact with the opening in the top and the gasoline brought to its boiling point. In case it is desired to record the initial boiling point, the thermometer is read when the first drop falls from the end of the condenser tube into the graduate. The amount of heat is then increased so that the distillation proceeds at a rate of from four cc. to five cc. per minute. The thermometer is read as each of the selected percentage marks is reached (20, 50 and 90). In case maximum boiling point or dry point (one definition of end point) is to be measured, the heating is continued after the flask bottom has boiled dry until the column of mercury reaches a maximum and then starts to recede consistently.

7. Distillation loss is determined as follows. The condenser tube is allowed to drain for at least five minutes after heat is shut off and a final reading taken of the quantity of distillate collected in the receiving graduate. The distillation flask is removed from the condenser and thoroughly cooled as soon as it can be handled. This can be accomplished by using first an air bath and then immersing the bulb of the flask in the ice-water mixture in the condenser trough. The condensed residue is poured into a small graduate or graduated test tube and its volume measured. This residue is retained for the acidity test. The sum of its volume and the volume collected in the receiving graduate, subtracted from 100 cc. gives the figure for distillation loss. In case this loss exceeds two per cent, a check distillation should be run to ascertain whether such loss is due to the presence of highly volatile constituents or to failure to condense the lighter fractions on account of too strong heating at the beginning of the distillation.

SWEET WAX.

Under the designation "Sweet Wax," a new compounding ingredient is being offered to rubber manufacturers. Its function is to render very smooth running a stock intended for delivery from a tubing machine, and in mold work to impart a highly polished finish to the article. The material also serves as a mild accelerator of vulcanization rather than as a retardant of the cure.

The material is a blend of hard, waxy hydrocarbons, neutral, of light gravity, and has a yellow to brownish color.

VULCANIZATION OF RUBBER BY MEANS OF ACCELERATORS.

J. L. B. Hasselt employs as accelerators combinations of nitro-sodium-ethylaniline with aromatic bases. These accelerators are said to be more active than either constituent alone. For example combinations of two molecules of nitro-sodium-ethylaniline may be used with one molecule of each of the following products: aniline, dimethylaniline, o-toluidine, p-phenylenediamine, x-naphthylamine.

The amount added to the rubber mixing is from 0.25 to 0.5 per cent. (*"Le Caoutchouc et la Gutta Percha."*)

[1] *"Gummi-Zeitung,"* 1918, 33, 2-3.

[2] According to the Bureau of Mines, Technical Paper No. 214.

CHEMICAL PATENTS.

THE UNITED STATES.

METHOD OF COLORING FIBROUS MATERIAL, which comprises subjection of the material to the action of a solution of cadmium chloride and that of a polysulphide of an alkaline earth metal; finally applying a vulcanizable plastic compound. (Charles H. Dennison, Wollaston, assignor to American Rubber Co., Boston—both in Massachusetts. United States patent No. 1,332,974.)

RECLAIMING AND REGENERATING RUBBER WASTE. The disintegrated material is subjected to the action of a heated liquid bath containing about 10 to 15 per cent by weight of caustic soda in water solution for approximately six to twenty hours at 50 to 200 pounds pressure per square inch. Subsequently the waste is treated by the action of a solvent mixture comprising the following materials in the approximate proportions by weight given: phenylenediamine, one part; paraffine oil, two parts; mineral rubber, two parts; rubber resin, two parts; acetic acid, two parts; subsequently the treated material is washed and dried. (Frank L. Kryder, Akron, Ohio. United States patent No. 1,340,777.)

CAN-SEALING COMPOSITION, comprising rubber dissolved in a volatile solvent and china wood oil. (Theodore Cramp Wester, Baltimore, Maryland. United States patent No. 1,341,489.)

SEALING COMPOSITION. A plastic composition comprising a rubber solution and gutta siak. (Theodore Cramp Wester, Baltimore, Maryland. United States patent No. 1,341,490.)

SOUND ABSORBING COATING. A composition of matter and article of manufacture consisting of rubber and volatile spirits. (Clarence H. Bryce, Glen Ridge, New Jersey, assignor to Benjamin Moore & Co., Brooklyn, New York. United States patent No. 1,341,704.)

THE UNITED KINGDOM.

ANTIMONY PIGMENT SUITABLE FOR VULCANIZATION is produced by decomposing a mixture of an antimony salt with alkali waste liquor by means of an excess of sulphuric or hydrochloric acid. Any proportion of the alkali waste liquor may be replaced by the product obtained by boiling lime with sulphur. (E. F. Morris, Holly Bank, Roby, near Liverpool, England. British patent No. 138,137. Reference is also made to Specification No. 11,827/84.)

VULCANIZING RUBBER. Natural or synthetic rubber is vulcanized by the addition of salts of mono- or di-substituted dithiocarbamic acids and di- or tri-valent metals or inorganic radicals, and sulphur, the amount of sulphur being reduced to 2-0.2 per cent of the rubber. In an example, a mixing of 100 parts rubber, 0.5 parts sulphur, and one part paramethylene dithiocarbamate of zinc, with or without the addition of mineral oxides, reclaimed rubber, substitutes, and the like, is vulcanized in the usual manner. (G. Bruni, Milan, Italy. British patent 140,387.)

VULCANIZING RUBBER. The substances added as described in patent No. 140,387, namely, salts of mono- or di-substituted dithiocarbamic acids and di- or tri-valent metals or inorganic radicals, are added to mixings containing the usual proportion of sulphur, and the product is vulcanized at a lower temperature than usual, or at the usual temperature in a shorter time. In an example, a mixing of 100 parts of rubber, eight parts sulphur, one part pentamethylene dithiocarbamate of zinc, with or without fillers, is vulcanized in five minutes at a temperature of 120 degrees C., or in 45 minutes at 90 degrees C., or in a few days at air temperature. (G. Bruni, Milan, Italy, British patent No. 140,388.)

COMPOSITION FOR FILLING TIRES, consisting of soya bean oil 24 pounds, chloride of sulphur six pounds, oxide of magnesia 17½ ounces and venetian red three ounces. The ingredients are mixed and poured into a mold. When hard, the composition is placed in the tire casing as a substitute for air. (F. A. Hager, 441 Hawthorne avenue, Portland, Oregon, U. S. A. British patent No. 140,781.)

GERMANY.

PIPERIDINE PIPERIDYLDITHIOCARBAMATE, for use as a vulcanization catalyst, is prepared by the action of carbon bisulphide on an aqueous solution of piperidine at a low temperature; the presence of the water moderates the reaction. (Farbenfabriken, formerly Friederich Bayer & Co., Leverkusen, near Köln am Rhein. German patent No. 316,000, December 10, 1917.)

PROCESS FOR ACCELERATING VULCANIZATION of natural or artificial rubber-like substances. (Stanley John Peachey, Stockport, England. German patent No. 323,088. February 17, 1915.)

LABORATORY APPARATUS.

WICKER-WOUND WASH BOTTLES.

NEAT AND DURABLE wicker winding on the necks of flasks used as wash bottles is a welcome laboratory convenience when hot liquids must be handled. Wickering can also be applied to any glassware other than flasks or bottles, as convenience may require. (The Will Corporation, Rochester, New York.)

THE DAVON MICRO-TELESCOPE.

MICRO-TELESCOPE.

A patented English instrument for viewing objects is known as the "Davon" micro-telescope, shown in the illustration. The short focus type permits viewing specimens at a distance of from ten to 18 inches with magnification of from 15 to 38 diameters with large field and great depth of focus. A rod with a rubber foot is attached to the telescope so that the latter may be adjustably raised or lowered to the desired distance, the rubber foot serving as a non-slipping rest for the instrument. (F. Davidson & Co., 29 Great Portland street, London, W. 1, England.)

MERCURY SEALED ABSORPTION BULB.

The new Fleming patent mercury-sealed absorption bulb is automatically sealed when not in operation and has no inlet or outlet valves to turn off during the course of analysis. It eliminates errors because carbon dioxide or moisture will not escape even when the rate of flow of oxygen is as high as 600 per minute and there is no danger of trapping oxygen under pressure. The use of the new bulb reduces the number of weighings necessary and gives the analyst all the other advantages mentioned, in addition to those which have made the regular Fleming bulbs popular for carbon dioxide determinations by the combustion method. (Eimer & Amend, 211 Third avenue, New York City.)

MERCURY SEALED ABSORPTION BULB.

VITREOSIL BEAKERS.

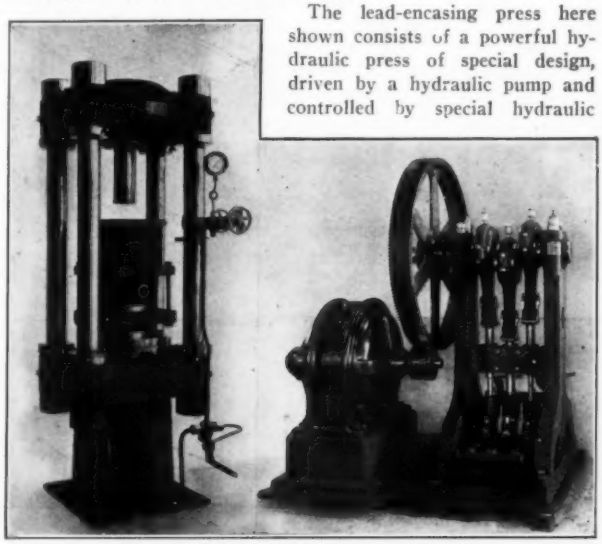
One can evaporate, bake, and ignite in the same vitreosil beaker, since the negligible expansion of vitreosil over any range of temperature insures it against injury by the most severe heating, by quick water-cooling, or by the addition of cold acid to the hot utensil.

After evaporating an acid solution to dryness in a vitreosil beaker, the residue may be baked at the highest temperature available or strongly ignited over the blast lamp in the same beaker, without the least danger of breakage. (The Thermal Syndicate, Limited, 50 East 41st street, New York City.)

New Machines and Appliances.

HYDRAULIC LEAD-ENCASING PRESS.

RUBBER-HOSE MAKING requires various machines of special design but not one is more interesting than the machine that covers the uncured hose in continuous lengths with lead, that in reality is a mold which applies a plain, corrugated or ribbed, surface to the vulcanized hose.



LEAD PRESS AND HYDRAULIC PUMP.

The lead-encasing press here shown consists of a powerful hydraulic press of special design, driven by a hydraulic pump and controlled by special hydraulic operating valves. These presses are usually made in two sizes, 650 tons and 1,000 tons capacity. The lead-encasing equipment comprises a lead-holding cylinder of alloy steel fitted with a wrought steel steam jacket and an oil-hardened and heat-treated alloy steel ram for forcing the lead downward through the cylinder. Located immediately below the lead cylinder is a block containing the lead-encasing dies and chambers through which the hose passes in a horizontal plane. There are several sizes of die blocks and dies for covering the ranges of hose from ¾-inch to 3-inch outside diameter. There are other special devices in connection with the die block and dies for perfecting the lead-encasing operation. The press is set on a foundation so the floor is level with the top of the hydraulic cylinder and the reels for the uncovered and covered hose are placed on the floor at opposite sides of the press.

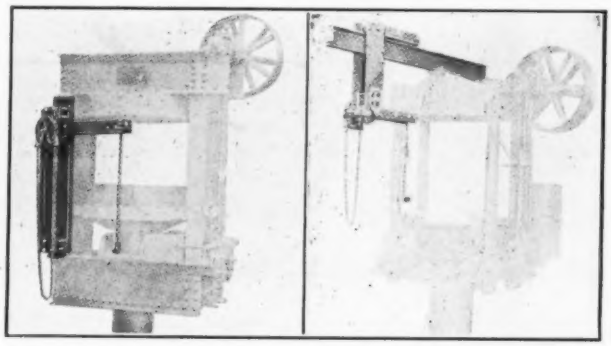
The operation is briefly as follows: the uncured hose is brought on a reel to the press, the cylinder of the press being charged with lead, the hydraulic pressure is applied and the lead covering is extruded through the die block in a horizontal direction. As the lead tubing moves outwardly, the end of the rubber hose is inserted into the opposite side of the die block and is lead-encased as the lead tubing is extruded. It is then wound on a special steel reel on the exit side of press. After the first charge of lead is exhausted, the cylinder is refilled and the process repeated whereby any length of hose can be encased without joints or seams. The reel of lead-encased hose is then placed in a vulcanizing oven and internal pressure applied to the hose during the vulcanizing process, after which the lead-encased hose passes through a stripping machine which removes the lead covering and the hose is ready for packing and shipping. (John Robertson & Co., 121-137 Water street, Brooklyn, New York.)

SOLID TIRE PRESS CRANES.

The labor-saving devices here pictured will interest tire factories, service stations, and garages, as one man can easily handle heavy truck wheels with these cranes. As the larger sizes of wheels consume most of the space between the two platens of the press, the cranes should operate in a very small space. Therefore they have been made exceptionally compact without impairing their strength. The hoisting mechanism is especially efficient, with automatic brake, and is built into the crane framework. All gears are machine cut from solid blanks.

The mast jib crane is arranged for attaching to the left-hand vertical column of the press. The boom occupies only 4 inches of space and swings over a large arc. When not in use it can be swung out of the way.

The monorail crane operates on an I-beam track attached to the top of the press in the center. It has four single-flange track wheels with hardened steel roller bearings, insuring free movement and long life. The boom requires only 4 inches of head room. When not needed at the press, it can be moved out of the operator's way, or used independently as part of the track system. (The Chisholm-Moore Manufacturing Co., Cleveland, Ohio.)

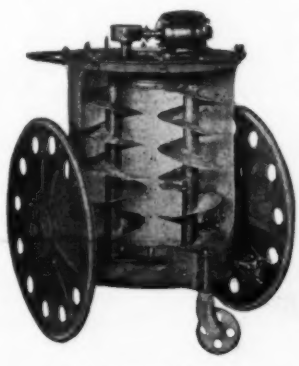


MAST JIB TYPE. MONORAIL TYPE.

ONE-TON TIRE PRESS CRANES.

A NEW SOLUTION MIXER.

A new and novel mixer for liquids, semi-liquids and soluble materials which is meeting with success in handling rubber cement and other compounds, is shown in the accompanying illustration.



THE TRIPLEX MIXER.

The agitating or mixing is accomplished by upper and lower flights mounted and opposing each other on vertical shafts, which revolve and also rotate about the container. The lower flights raise the heavy material from the bottom and the upper flights lower the light material from the top and the rotating movement about the container imparts a complete three-way movement, whereby every particle of material is displaced.

The portable type is made in three sizes, 10, 20 and 50 gallons capacity. The 10 and 20-gallon mixers are hand-portable and hand-operated. The 50-gallon mixers are wheel-portable and

motor-driven. The stationary type is made in 50 to 3,000 gallons capacity, and may be driven by motor or belt. (The Cleveland Mixer and Manufacturing Co., Cleveland, Ohio.)

TIRE CASING INSPECTING MACHINE.

The accompanying illustration shows a novel machine designed as an aid to the tire manufacturer, dealer, and repairman in discovering defects in the tire.

ROBERTSON'S TIRE INSPECTOR.

The tire is hung on the sliding head, which adjusts itself, and the pulling fingers are placed over the beads. Pressure applied on the foot lever spreads the beads apart and at the same time the bottom support pushes up or bulges the tread inward. This opens any breaks or imperfections in the fabric, which sometimes are not easily detected by the old methods. While the casing is on the machine, the hands are free to turn it and to chalk-mark rim cuts, loose spots on the tread, and other defects. Blind nails are easily found and extracted while the tire is spread; tubes that are stuck to the casing are taken out, without danger of tearing; and new tubes are easily inserted or old ones removed from stiff cord tires. (W. H. Robertson, 223 North Church street, Rockford, Illinois.)

MACHINE FOR CUTTING RUBBER WASHERS.

Rubber washers are now being cut accurately at a speed that heretofore has not been obtained commercially. The work is done on an automatic machine—here illustrated. It will cut

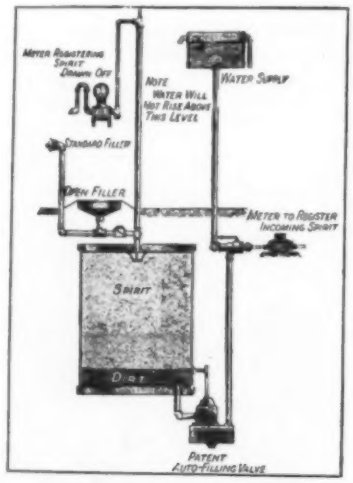
AUTOMATIC WASHER CUTTING LATHE.

washers having inside diameter ranging from ⅜ to 5 inches, in widths varying from 1/32-inch to ¾-inch.

The cutting is done by a circular knife that is rotated by the stock and forced into it by the action of the cam. It is fed by a screw that is operated by a silent, smooth-acting cam. Variations in width are made by changing the feed-screw gears. This machine will take tubing 27 inches in length, having inside diameter of ⅞-inch and over; for lesser diameters than ⅞-inch it takes tubing 11½-inch in length. The short length tubing is required on account of the small size of the mandrel. (Black Rock Manufacturing Co., Bridgeport, Connecticut.)

RUBBER SOLVENT STORAGE SYSTEM.

A new system for distributing inflammable rubber solvents, such as petrol, naphtha, etc., has been devised, which is adaptable to any quantity from a small tank to a system provided with many drawoff points. It is worked by hydraulic power which distributes the solvents automatically to any level at which the factory's water storage can be applied.



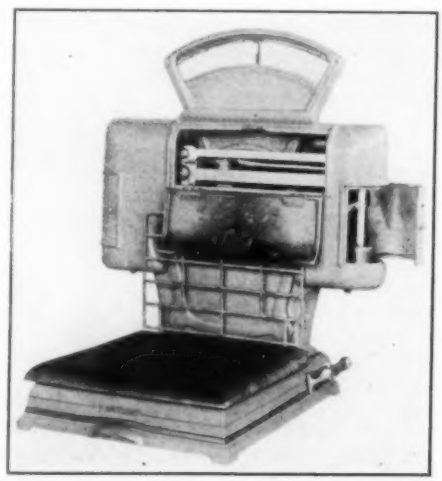
BYWATER NAPHTHA STORAGE.

The storage tank is placed below the ground or at any convenient point for receiving the solvent from railroad or water carriage. A meter is arranged to measure the quantity run into the tank. Water from the main supply is let into the tank, when the oil or spirits rise to the top and any dirt or foreign matter sinks into the water. This accumulation is drawn off later when the tank is refilled with solvent.

The naphtha flows through the connecting pipes to the point where a draw-off is needed in any part of the factory. A great saving is obtained in evaporation by this system, as the storage tank and the connecting pipes are kept full. Meters can be placed at any point, by which the supply can be gaged, and absolutely pure solvent can be drawn off without any risk of fire or loss. (Bywater & Co., 121 Kingsway, London, W. C. 2.)

SPECIAL SCALE FOR RUBBER COMPOUNDING.

Scales are of such importance in rubber compounding that special weighing devices have been designed for use in the compound room. The one here pictured is of the predetermined weight type, having no graduations on the chart with the exception of a single reading line in the center. It has two beams, the lower one of ten pounds capacity, graduated in ounces, and the upper of two pounds capacity, graduated either in quarter ounces or one one-hundredth pounds, as the formula requires. Extra counterpoise weights are furnished so that the total capacity of the scale is 102 pounds, and it will handle all ingredients from lamp black to rubber.



COMPOUNDING SCALE.

The entire beam and counterpoise mechanism is encased in a dust-proof aluminum housing having three doors; the upper door covering the beams being equipped with a Yale lock, the right-hand door covering the counterpoise being so arranged that it cannot be opened except when the upper door is open, and the left-hand door opening into a compartment which may be used for the storage of weights. The scale is built upon the four-point principle of lever construction, is without check or stabilizing mechanism of any description, has agate bearings throughout, and is exceptionally sensitive and accurate. (Detroit Automatic Scale Co., Detroit, Michigan.)

MACHINERY PATENTS.

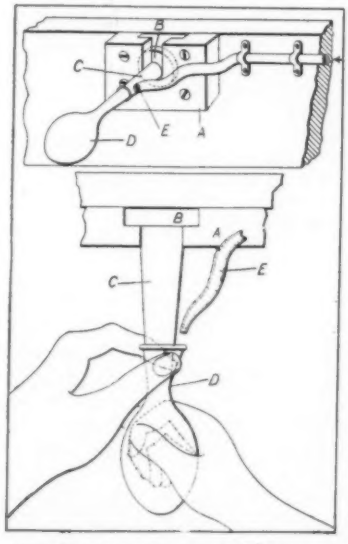
VARIABLE SPEED DRIVE FOR RUBBER MILLS.

THIS INVENTION relates to an improved method of driving the rolls of rubber mills, consisting, essentially, in driving the front rolls of a single mill or the front rolls of a series of mills, and the back roll of a single mill or the back rolls of a series of mills by two variable speed electric motors so that the speed ratio between the front and back rolls can be varied to any desired amount. (Frederick Iddon, Leyland, England, United States patent No. 1,342,114.)

STRIPPING DIPPED GOODS FROM CURING FORMS.

The illustration shows a perspective and plan view of the apparatus which is briefly described as follows:

Bracket *A* is attached to the edge of a bench or other suitable support arranged with a slot to receive the flanged end *B* of the form *C* carrying the object *D* to be removed by air inflation through the compressed air outlet *E*.



TOY BALLOON STRIPPING MACHINE.

The mode of operation is clearly shown in the lower illustration, where a pocket is formed by pressure of the operator's thumb and forefinger for the entrance of compressed air between the form and the rubber object, which is thus detached by slight inflation and easily stripped from the form. (William Gregg Lerch, assignor to The Miller Rubber Co., both of Akron, Ohio. United States patent No. 1,330,595.)

IMPROVED AIR BAG.

To avoid permanently stretching the air-bag through repeated use, a plurality of removable layers of fabric and rubber, preferably in the form of a series of sets of overlying or superimposed patches, are applied to the outer surface of the bag so as to approximately cover it. These patches are applied with cement after a preliminary dusting with soapstone so that while they will adhere sufficiently to enable the bag to be handled in the ordinary manner they are individually removable.

After the first tire is cured thereon an outer patch (or patches) is removed, thus decreasing the dimensions of the bag by a small amount, but sufficient to compensate for the permanent stretch of the bag. This process is repeated until all the layers or patches are removed, at the end of which time the bag has reached the limit of its stretch. (Frank Fenton, assignor to The Miller Rubber Co., both of Akron, Ohio. United States patent No. 1,335,-101.)

APPLYING REPAIR-TIRES TO WORN CASINGS.

Worn casings are repaired according to this invention by applying cement to one or both parts, allowing it to become tacky, applying the tread portion of the repair tire to the tread of the casing while in normal form, deforming the sides of the casing to increase their superficial area, and then rolling down the sides of the repair-tire while the casing is in its deformed condition. (Charles C. Gates, assignor to the Gates Rubber Co., both of Denver, Colorado. United States patent No. 1,341,121.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

NO. 1,339,451. Centering ring for tire beads. W. F. Goff, Akron, O., assignor to The B. F. Goodrich Co., New York City.
1,339,815. Machine for sawing tire cores. J. C. Fiddyment, Akron, O.
1,339,816. Machine for finishing tire molds. J. C. Fiddyment, Akron, O.
1,340,440. Apparatus for treating tires during vulcanization. F. G. Flegal, assignor to The Savage Tire Co.—both of San Diego, Calif.
1,340,641. Repair vulcanizer. H. K. Wheelock, Los Angeles, Calif., assignor to Western Vulcanizer Manufacturing Co., a partnership, Chicago, Ill.
1,340,642. Repair vulcanizer. H. K. Wheelock, Los Angeles, Calif., assignor to Western Vulcanizer Manufacturing Co., a partnership, Chicago, Ill. (Original application divided.)
1,340,882. Apparatus for making articles from sheet rubber, such as bathing caps, etc. R. A. Freeman, Flushing, N. Y.
1,340,883. Apparatus and method for binding edges of rubber bathing caps, etc. R. A. Freeman, Flushing, assignor to I. B. Kleinert Rubber Co., New York City—both in New York.
1,340,884. Machine for making sheet-rubber articles, such as bathing caps, etc. R. A. Freeman, Flushing, N. Y.
1,341,422. Guard for rubber mills and similar machines. L. Gaisman, assignor of ½ to S. Dreyfus—both of Manchester, England.
1,341,500. Tire-building stand. C. L. Durham, Salina, Kans.
1,341,726. Tire-changing machine. I. A. Weaver and J. Sternaman, Jr., assignors to Weaver Manufacturing Co.—all of Springfield, Ill.
1,341,727. Tire changer. I. A. Weaver, assignor to Weaver Manufacturing Co.—both of Springfield, Ill.
1,341,728. Tire-changing apoliance. I. A. Weaver and J. Sternaman, assignors to Weaver Manufacturing Co.—all of Springfield, Ill. (Application divided.)
1,341,729. Tire-changing mechanism. I. A. Weaver, assignor to Weaver Manufacturing Co.—both of Springfield, Ill. (Application divided.)
1,341,730. Tire-removing appliance. I. A. Weaver and J. Sternaman, assignors to Weaver Manufacturing Co.—all of Springfield, Ill. (Application divided.)

THE DOMINION OF CANADA.

199,970. Rubber mixer. F. Iddon, Leyland, Lancaster, England.
200,066. Mold for making inner tubes for pneumatic tires. The Dunlop Rubber Co., Limited, Westminster, County of London, assignee of Colin Macbeth, Birmingham, County of Warwick—both in England.
200,067. Machine for calendering vulcanite bases. The Dunlop Rubber Co., Limited, Westminster, County of London, assignee of Colin Macbeth and Harry Willshaw, both of Birmingham, County of Warwick—both in England.
200,169. Tire mold. H. Raflovich, Buffalo, N. Y., U. S. A.
200,349. Mold for vulcanizing pneumatic tires. W. Seward, Baltimore, Md., U. S. A.

THE UNITED KINGDOM.

140,024. Repair vulcanizer. F. O. Lake, 58 Rhode Island avenue, Washington, D. C., U. S. A.
140,317. Tool for abrading rubber surfaces preparatory to patching. F. N. Cordell, 709 Pine street, St. Louis, Mo., U. S. A.
140,893. Apparatus for making solid tires, washers, etc. F. Offenhauser, Tarrytown, N. Y., U. S. A.
140,875. Manufacture of cushion tires. A. J. Ostberg and A. Kenny, Judd street, Richmond, Victoria, Australia.

THE FRENCH REPUBLIC.

502,650. Apparatus for constructing pneumatic tires. E. Hopkinson, New York City, U. S. A.
502,848. Improvements in apparatus for regenerating treads and tires. S. H. Goldberg, Chicago, Ill., U. S. A.
502,849. Improvements in apparatus for rebuilding tire treads. S. H. Goldberg, Chicago, Ill., U. S. A.

PROCESS PATENTS.

THE UNITED STATES.

NO. 1,339,696. Producing tire-patch material. C. O. Duffy, Dallas, Tex.
1,339,789. Subjecting molded rubber articles to sufficient heat to remove surplus rubber from edges. R. Rothwell, Kevport, and W. H. Cuttrell, Matawan, N. J., assignors to Whitall Tatum Co., New York City.

1,340,452. Manufacture of balls from plastic material. D. S. Landstra, South Orange, N. J.
1,340,965. Repairing tires and tubes. T. A. McAllister, Augusta, Ga.
1,341,247. Manufacture of inner tubes. J. J. Shoemaker and C. C. Cox, Akron, O.

THE DOMINION OF CANADA.

200,350. Vulcanizing pneumatic tires by utilizing internal pressure of vulcanizing chamber. W. Seward, Baltimore, Md., U. S. A.
200,400. Manufacture of vulcanized rubber heels. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of W. J. Kent, New York City, U. S. A.

THE FRENCH REPUBLIC.

503,099. Method for doing away with the chief cause of wear in pneumatic tires. J. Mallet and A. Capponi.

MOTION STUDY STOP-WATCH.

Stop-watches are not a new idea but the recent demand for greater production has made necessary more accurate and conveniently arranged stop-watches for industrial time study.

DECIMAL STOP-WATCH.

The stop-watch illustrated herewith is specially designed for industrial purposes and can be held in one hand while the other is free to write. The watch is started and stopped by a catch at the left of the stem, which is pushed in one direction to stop and another direction to start. If it is desired to bring the stop back to O the stem is pressed in.

The large dial is divided, not into minutes and seconds, but into 100 parts to the minute. In other words, the division is a decimal one. This makes it easy to compute cost figures by multiplying the decimal fraction of a minute which is obtained directly from the watch. The small dial reads in minutes and runs to 30 minutes. This watch is a great convenience in making time studies and is far superior to those divided into fractions of seconds. (Educational Exhibition Co., 26 Custom House street, Providence, Rhode Island.)

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DISTRICT OFFICES.	COOPERATIVE OFFICES.
New York: 734 Customhouse.	Cleveland: Chamber of Commerce.
Boston: 1801 Customhouse.	Cincinnati: Chamber of Commerce; General Freight Agent, Southern Railway, 96 Ingalls Building.
Chicago: 504 Federal Building.	Los Angeles: Chamber of Commerce.
St. Louis: 402 Third National Bank Building.	Philadelphia: Chamber of Commerce.
New Orleans: 1020 Hibernia Bank Building.	Portland, Oregon: Chamber of Commerce.
San Francisco: 307 Customhouse.	Dayton, Ohio: Dayton Chamber of Commerce.
Seattle: 848 Henry Building.	

(32,846.) A bicycle merchant in Bulgaria wishes to secure an agency for 20 to 100 bicycles, 100 to 1,000 bicycle tires, 100 to 1,000 inner tubes. Quotations c. i. f. Bourgas. Payment in leva. Correspondence in Bulgarian or French.

(32,873.) A firm in Czechoslovakia desires an agency for motorcycles, light cars and tires. Quotations c. i. f. Hamburg. Payment in currency or credit terms. Correspondence may be in English.

(32,905.) Commercial agent in Spain wishes agency for sale of balata belting. Quotations c. i. f. Spanish port. Correspondence in Spanish or French.

(32,908.) Representative of a firm in United States, sailing for Spain, desires agency for druggists' sundries in Spain and Portugal.

(32,910.) Retail drug company in Canada wishes to buy druggists' sundries. Quotations f. o. b. Canadian port.

(32,944.) A dental surgeon in Poland wants an agency for the sale of dental supplies, including rubber dam and rubber for vulcanizing. Quotations c. i. f. Danzig or f. o. b. New York. Correspondence may be in English.

(32,952.) Commission merchants in Poland wish exclusive agency for sale on commission of all kinds of rubber, in Poland and Lithuania. Quotations c. i. f. Danzig. Payment against documents after arrival of goods.

(32,953.) Cooperative association in Argentina wishes agency for sale of belting. Payment on arrival of goods in Argentina. Correspondence in Spanish.

(32,956.) Commercial agent in Australia wishes agency for sale of braces and men's garters.

(32,981.) American firm having connections with Australia and European countries desires an agency for the sale of rubber heels from manufacturers who can make up their wares for export under special labels.

(32,986.) A retail druggist wishes to buy and to secure an agency for druggists' sundries. Quotations f. o. b. Canadian port.

(33,004.) American representative of firm in Colombia wishes agency for sale of elastic webbing.

(33,005.) Commercial agent in Switzerland desires agency for sale of india rubber. Quotations French or Belgian port. Correspondence may be in English.

(33,012.) Manufacturers' agent in Australia desires direct representation of manufacturers of druggists' rubber goods.

(33,029.) A firm in Mexico wishes an agency for sale of tennis shoes with rubber soles, which are very popular for everyday wear. Quotations f. o. b. western ports. Correspondence may be in English.

(33,035.) A firm in India desires an agency for the sale of surgical, dental, and rubber goods.

(33,039.) An importer in the Maltese islands wishes an agency for rubber tires for motor cars and cycles. Payment against documents in local banks.

(33,047.) Importing company in South Africa desires agency for sale of rubber goods and surgical appliances.

(33,065.) A commercial association in Italy desires to secure an agency for the sale of prime materials for rubber factories. Quotations c. i. f. Genoa. Payment in United States currency. Correspondence may be in English.

(33,089.) The administration of a city in Austria wishes to make contracts for a supply of solid and pneumatic tires for 150 automobile trucks, 80 passenger automobiles, and 25 omnibuses, to be delivered as they are needed.

RUBBER SCRAP DIVISION MEETS.

A meeting of the Scrap Rubber Division of the National Association of Waste Material Dealers, Inc., was held at the Hotel Astor, New York City, on Wednesday morning, June 16, with Nat E. Berzen presiding. A special committee consisting of H. H. Cummings, Herman Muehlstein, and J. W. Long was appointed to deal with changes in the Scrap Rubber circular. Other matters discussed were of a routine nature.

THE PONY BLIMP, A ONE-MAN DIRIGIBLE MANUFACTURED BY THE Goodyear Tire & Rubber Co., has been placed upon the market and the United States Government was one of the first purchasers. Contracts were recently closed for two by government officials in Akron.

New Goods and Specialties.

THE "BROWNFOOT" RUBBER BOOT.

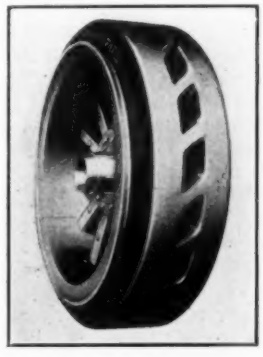
A HANDSOME RUBBER BOOT comes to us from Canada. It has a brown foot, with sole and heel of the same color, and a white top trimmed with brown top bead. The trade mark on the side, near the top, is also brown. The boot is made of high-grade white and brown rubber and is lined with duck. It comes in three heights, styled, variously, hip, "Storm King" (thigh), and short, for men. The sole is knurled and the brown foot has a fancy tab effect at back and front, reaching some distance upward on the white leg part.

THE "BROWNFOOT."

A very similar boot called the "Grayling" is made by the same manufacturer. It is chiefly of gray rubber and instead of having the foot of contrasting color, has the white foxing at the edge above the sole. It is made of extra quality rubber and is friction lined. This boot comes in the same heights for men as the "Brownfoot," and also in short length for boys. (Gutta Percha & Rubber, Limited, 47 Yonge street, Toronto, Ontario, Canada.)

NEW SINGLE SOLID TIRE.

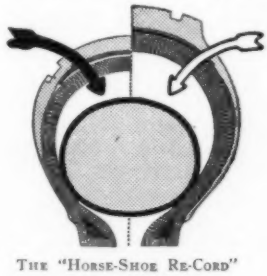
The newest single solid tire attempts to overcome the chief cause of internal friction and dissipate the frictional heat generated by traction by means of deep depressions with cross-bars of rubber between, at regular intervals around the circumference of the tire. The depressions go deep enough to reach below the point where a tire is ordinarily worn to the limit of its serviceability, the tire thereby retaining its distinctive qualities without requiring additional attention such as regrooving, etc. At the same time the shape of the depressions is such that stones and other foreign bodies cannot permanently lodge within them. (United States Tire Co., New York City.)



THE "MONOTWIN" TIRE.

AN INNER TUBE FOR CORD TIRES.

In order to use inside a cord tire the ordinary inner tube which was designed to fit a fabric tire, it must be inflated far beyond what was intended to be its normal point of stretching. This tends to weaken the wall, both because of overstretching and of increased friction.



THE "HORSE-SHOE RE-CORD" INNER TUBE.

The accompanying diagram in cross-section illustrates the additional amount of space to be filled by the inner tube in a cord tire, as compared with that within a fabric tire. The black arrow indicates the cross-section of a five-inch fabric tire and the white arrow the cross-section of a cord tire.

The "Horse-Shoe Re-Cord" inner tube has been designed purposely to meet these conditions. Its wall is thicker than that of the ordinary inner tube, because it is composed of nine plies of high-grade laminated rubber instead of the more usual six. Its name is intended to emphasize its greater ability to meet the required conditions. This inner tube is brown. (Racine Auto Tire Co., Racine, Wisconsin.)

TENNIS RACKET COVER.

A rubber sheath to cover tennis rackets is something that should appeal to all those who take pride in keeping their sporting equipment in prime condition. This sheath is in two parts, each having an appearance similar to that of a bathing cap, except that the portion that fits over the lower part of the racket has an opening to permit the passage of the handle. The handle is gripped firmly by the rubber, the upper portion of which overlaps the lower, providing an entirely waterproof covering. The regular tennis case may be used over the rubber one if additional protection is desired or should be requisite.

TAYLOR TENNIS SHEATH.

PATENTED REPAIR KIT.

A handy repair kit that comes put up in a neat box is intended for use in mending footballs, baseballs, bladders for game balls, and other rubber articles. It has been officially approved by the Board of Education of the City of New York and is particularly recommended by the manufacturer for practical use in gymnasiums, colleges, schools and camps. The box is convenient in size, namely, 7 by 9 by 3 inches, and contains the necessary tools and materials, including a special patented device for the emergency repair of necks of bladders. The tennis racket sheath and repair kit are put out by the same house. (Alex Taylor & Co., Inc., 26 East 42d street, New York City.)

(*Patented April 22, 1920.*)

ENGLISH SOLE-PADS.

From England come the "Double Arch" sole and heel pads in sizes to fit all boots. They are interchangeable and may be arranged in six different ways. The rubber pads are attached by leather disks which, it is claimed, insure a perfect fastening to the boot. This idea is registered in the patent office of the United Kingdom. (J. P. Cochrane & Co., Albert street, Edinburgh, and 29 Farringdon street, London, E. C. 4.)

"DOUBLE ARCH" PADS.

MOLDED RUBBER FISH LURES.

A line of cleverly simulated insects has been developed in molded rubber for the purpose of deceiving the wily fish into biting at the hooks these ingenious lures conceal. The entire line comprises ten numbers, including representations of the crawfish, two sizes of helgramite with bucktail, a medium and a small-sized helgramite, four sizes of cricket ranging from the extra small to the large, three sizes of grasshopper, and a large crawfish and helgramite. The articles are all extremely lifelike. The illustration shows three numbers of the line, all of which are artfully molded in soft rubber. (W. J. Grube, Delaware, Ohio.)

HELGRAMITE.

GRASSHOPPER.

CRICKET.

FOUR-HOLE BAGPIPE BALLOONS.

Toy manufacturers are busy these days and the time for fairs, summer fêtes, and other occasions when Young America delights in anything that will produce a noise, offer opportunity. Two ingenious balloons of the squawker type, modified to produce notes which sound like a bagpipe, are shown here. The mouthpieces are shellaced and the lower one is so constructed that, when released from the mouth, all air that has passed into the bag will pass out through the tone pipe. The bags are of high-grade red rubber and of sufficient weight to permit excess inflation and moderately rough usage. (The Eagle Rubber Co., Ashland, Ohio.)

"EAGLE BRAND" BAGPIPES.

INNER TUBE THAT MINIMIZES BLOW-OUTS.

A new pneumatic inner tube is so molded under compression that several hundred small depressions or pockets are geometrically distributed over the portion which comes next to the casing. If the tube is punctured, the excess rubber in these compressed portions immediately expands to prevent the escape of the air within. (The Climax Rubber Co., Columbus, Ohio.)

THE "CLIMAX" COMPRESSION INNER TUBE.

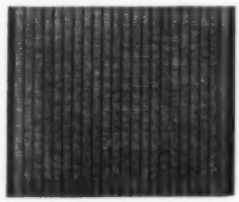
"SAFETY FIRST PULL-OVER" GLOVE.

A glove that is made to meet the demand for toughness without bulk, service without clumsiness, and wear-resistance where the wear comes hardest, is embodied in the one shown in the accompanying illustration. It is made of light-weight "stay soft" horsehide that is tough but entirely flexible and will, it is claimed, remain soft and pliable in spite of wetting. It has a sewed outseam and because of its construction and size can be easily pulled over any rubber glove. This is an especially desirable feature, as many gloves cannot be so used. (O. C. Hansen Manufacturing Co., Milwaukee, Wisconsin.)

"SAFETY FIRST PULL-OVER" GLOVE.

RUBBER RETAINER FOR BATTERIES.

In service, the positive plates of a battery tend to shed their active material, and as far as this takes place the battery wears out. One battery manufacturer has devised a slotted retainer made of hard rubber in a tough, thin sheet which is placed against the active material on each side of each positive plate. The slots are sufficiently numerous to permit the free passage of acid and current but so narrow as to make the retainer practically a solid wall, to hold the active material firmly in place. A special machine is employed to manufacture the "Philco" slotted retainer, because hard rubber is not easily cut and any tool used for the purpose tends to dull or break very quickly. It took five years to perfect this machine, developing it from the first crude model to the efficient device of today. (Philadelphia Storage Battery Co., Ontario and C streets, Philadelphia, Pennsylvania.)



"PHILCO" SLOTTED BATTERY RETAINER.

ACHILLES TIRES.

This is the "day" of the tire manufacturer and each new company, however like or unlike other tires its product may be in actual construction, must identify its product to the public by an individual distinctive tread design. The design on the left, called the "Butterfly," is that of an oversized, high-grade pneumatic tire, made with an extra ply of fabric. The one on the right is the "Reindeer," a lower-grade pneumatic tire, made under special brands for large distributors. (The Achilles Rubber and Tire Co., Inc., Binghamton, New York.)

ACHILLES "BUTTERFLY" AND "REINDEER" TIRES.

A PRACTICAL MAT FOR THE RUNNING BOARD.

A mat of attractive pattern, imitating diamond-shaped tiling blocks, is the "Motomat," intended for automobile running boards. It is made of the same kind of stock used in the rubber mats put on the steps of Pullman cars and is easily cleaned with a

whisk broom or stiff brush. The "Motomat" may be attached to a wooden running board by means of nails passed through the metal disks in the corners or by substituting small screws for the nails and using a quick-drying rubber cement to fasten the mat permanently in place. If the running board is of metal, the mat may be attached by means of flat-head stone bolts with lock washers. The "Motomat" is made in one size only—7⅛ by 11¼ by 3/16 inches.

THE "MOTOMAT."

A SEMI-CIRCULAR CUT-OUT RUBBER MAT.

The modern dentist or barber can now complete the entire sanitary equipment of his place of business by adding the "Circomat." This is a semi-circular rubber mat, made of a good quality of rubber stock with a canvas backing, and having a corrugated surface so designed that the corrugations run outward from the center to make it easy to clean. The outer edge is beveled so that the mat need not be taken up each time the room is swept or cleaned. The "Circomat" is made in several thicknesses, but the ¼-inch is particularly recommended, as this will lie on the floor without buckling. The central portion of the mat is cut away in a semi-circle varying from 17 to 24 inches in diameter, to fit the pedestal of a barber or dental chair, and the outside diameter is 72 inches. The "Circomat" is made in solid colors only—black, white, gray, red, or green.

THE "CIRCOMAT."

Both the "Motomat" and the "Circomat" are products of the same manufacturer. (United States Rubber Co., New York City.)

RUBBERIZED COTTON GLOVES.

The "Wearflex" cotton gloves, reinforced in one style by being rubberized and in another by the application of rubber and rubberized fabric inside the palm and fingers, provides for various classes of workers an inexpensive, comfortable glove that will outwear a glove made of cotton alone. The palm-faced glove is designed especially to meet the demand for a suitable glove to wear in factories and is unusually flexible for a glove that will wear as well. These gloves are desirable for use by farmers, firemen, masons, miners, molders, plumbers, steam fitters, iron workers, mill men, excavators, etc. (The McAdoo-Akron Co., Akron, Ohio.)

"WEARFLEX" GLOVE.

THE BURKE "GRAND PRIZE" GOLF BALL.

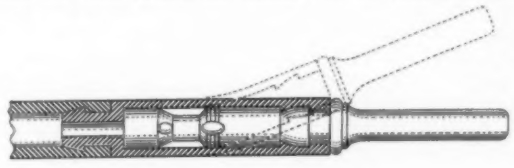
The "Grand Prize" golf ball is the result of three years of experimentation on the part of the manufacturers, and is said to be true in flight and remarkable for distance. The core and cover have been developed according to special formulas and are designed to withstand hard usage. (Burke Golf Co., Newark, Ohio.)

THE "JAYHAWK" GOLF BALL.

Another new golf ball with a covering of white gutta percha has been added to the season's offerings in this line. It has the dimple recessed marking and is enameled with a special gloss finish. It comes in two sizes, 29 and 31 pennyweights. (Schmelzer Arms Co., Kansas City, Missouri.)

INGENIOUS VALVE SHUT-OFF FOR SYRINGES.

An invention which dispenses with the usual metal clip comprises a fountain-syringe valve seat and valve of rubber, located near the juncture of tube and pipe, operated with one hand by rocking the parts against the elasticity of the conduit which encloses and holds the parts in alinement. The valve closes instantly on release. (Patent applied for by H. H. McGee. Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Conn.)



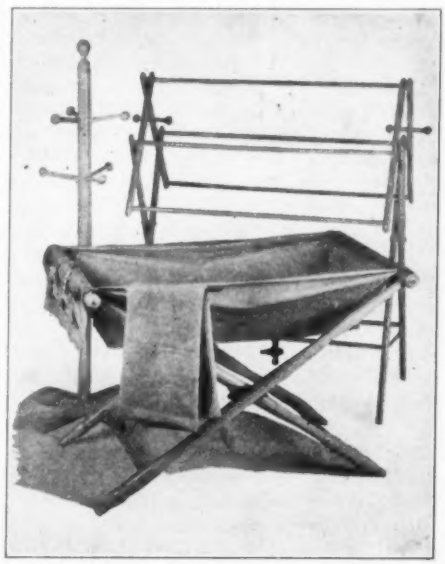
RUBBER VALVE AND SHUT-OFF FOR SYRINGES.

THE "FLEX-O-TYTE" FAN BELT.

A fan belt for Ford cars is composed of two thicknesses of bias-woven rubber-coated fabric, wrapped, cured, and cemented together. It is claimed by the manufacturer that this fan belt is proof against heat, water, and oil, and that it will not stretch. (A. J. Stephens Rubber Co., Kansas City, Missouri.)

INDIVIDUAL TUB FOR INFANTS.

Baby can now have the luxury of his own private bath tub, wherever he is. It is made of extra heavy canvas duck, without seams, double coated with white rubber, and is guaranteed by the manufacturer against leaking. There is an outlet faucet of hard rubber at the bottom of the tub and attached at one end are rubber pockets for toilet articles. The frame, which can be folded up compactly, is made of wood in either the natural or white enamel finish. A patented clutch at the crossing of the legs prevents undue tension and stretching of the rubberized canvas of which the tub is composed. The towel bar is covered with white rubber tubing. (New York Bath Manufacturing Company, 103 Chambers street, New York City.)



INFANT'S FOLDING BATH TUB.

Activities of The Rubber Association of America.

ANNUAL SUMMER OUTING.

PREPARATION is being made for the annual summer outing of The Rubber Association of America, which will, if at all possible, be held during the week of July 25, probably Wednesday, the 28th, but the date and the location cannot yet be definitely announced, due to the unavoidable delay in the selection of an appropriate place. Consideration has been given to the Seaview Golf Club at Absecon, New Jersey, which was the location of the 1919 outing, but it is hoped that arrangements may be made for the outing to be held at an equally satisfactory place nearer New York and consequently more convenient to members in New England and in the Middle West. Definite information will be supplied to all members at the earliest possible moment concerning the details of the arrangements.

MEETINGS.

EXECUTIVE COMMITTEE, TIRE MANUFACTURERS' DIVISION.

The June regular meeting of the Executive Committee, Tire Manufacturers' Division, was held at the offices of The Rubber Association on June 16, and a considerable number of matters of a routine nature were given attention. Principal in interest was the subject of determining recommended minimum and maximum cross-section widths for pneumatic tires, as to which it was not found possible to reach a final understanding and the matter is still before the Committee.

EXECUTIVE COMMITTEE, MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION.

The Executive Committee, Mechanical Goods Division, held its June regular meeting at the Yale Club on Thursday, June 24, at which time several subjects of considerable interest were given attention, but none of the matters have progressed to the point at which definite advices may be promulgated.

SPECIFICATION COMMITTEE, MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION.

For the convenience of several members of the Specification Committee who wished to attend the convention of The American Society for Testing Materials at the New Monterey Hotel, Asbury Park, the June meeting of the Specification Committee was held at that place on June 23 and 24. As has become the habit of this Committee, a large docket of subjects was disposed of and substantial progress was made in the working out of the detail connected with the Committee's work in the direction of improving and standardizing specifications for mechanical rubber goods.

INDUSTRIAL RELATIONS EXECUTIVE COMMITTEE.

The Industrial Relations Executive Committee met at Boston, June 10, 11 and 12, at the invitation of the Hood Rubber Co., and very satisfactory progress was made on the development of several subjects now before the Committee, definite advices concerning which will be disseminated from time to time through the medium of circular letters and bulletins as the work on any subject is completed.

BULLETINS.

The bulletins issued frequently during the past month by the Association for the benefit of its members contained the following information of trade interest.

It appears from the conclusion reached by the Research Staff of the National Industrial Conference Board on the length of the work week, in its study of the hours of work problem in five major industries, that no single schedule of hours is equally adaptable for all industries from the standpoint of production. The evidence is overwhelming that maximum efficiency cannot be obtained in all industries with any single specific work-day. In general, the ability to increase hourly efficiency and thus make up, either wholly or in part, for reductions in hours is largely determined by the amount of handwork, as distinguished from automatic machine work, which is performed in any given process.

With regard to medical supervision in industry, the cost is not large, and the benefits derived far outmeasure the expenditure. A compilation of data submitted by forty-one industrial establishments with an aggregate of 223,416 employes showed that in 1915 the average annual cost per employe was $1.88. A later study covering the year 1916 and including ninety-five industrial establishments with a total of 479,634 persons indicated an average annual cost of $2.21 for each person employed.

A prominent construction company, employing several thousand men and operating in the New England and Middle Atlantic States, has for some time been making an interesting experiment in educating its employes regarding labor costs. Recognizing the value to its executive of graphs and diagrams as aids to effective visualization of the status of work on the various jobs upon which the company is engaged, the practice of preparing charts for the foremen and workmen was recently adopted. These charts are plotted week by week and show the unit costs of each class of work, as, for example, excavation, making up forms, erecting forms, placing reinforcement, pouring concrete, etc. In order to be available without difficulty the charts are posted in a weatherproof case on the outside of the field office.

HOURS IN RUBBER WORK-WEEK.

The following tabulation was compiled from the responses of 187 rubber manufacturers:

	Number of Plants.	Hours of Work per Week.
California	1	44
	2	48
Canada	1	50
Connecticut	1	45
	5	48
	1	49
	1	49½
	1	50
	1	55
Delaware	1	48
	1	54
Iowa	1	44
Illinois	1	47
	2	48
	4	50
	5	55
Indiana	1	55
Kansas	1	52½
Massachusetts	1	45
	1	47
	18	48
	1	49½
	4	50
	1	52
	1	54
Michigan	1	54
	1	55
Minnesota	1	55
Missouri	1	51
	1	55
Nebraska	1	50
New Jersey	1	47
	1	47¾
	6	48
	2	49½
	7	50
	1	50¾
	1	52
	9	55
New York	2	44
	8	48
	3	49
	1	49½
	5	50
	2	52
	1	55
	1	60
Ohio	1	44
	3	45
	1	45½
	1	47
	12	48
	1	49
	2	49½
	5	50
	1	52½
	18	55
	1	57
	1	65
Oregon	1	48
Wisconsin	1	49
	2	55
	1	56
Pennsylvania	2	48
	1	50
	2	52
	1	53
	2	54
	3	55
	1	55½
	1	56½
	1	59
	1	60
Rhode Island	3	48
	1	50
Washington	1	44¼

A NEW PRINCIPLE FOR WAGE INCREASES.

The Industrial Court in Great Britain in a recent decision lays down a new principle for determining claims for wage increases. Hitherto the awards of the Committee on Production, and subsequently of the Interim Court of Arbitration, have been accepted as standard; these provided for wage increases commensurate with cost of living increases. The decisions, as a rule, provided also for rehearings every four months, so that if the cost of living were found to have increased, an equivalent wage increase might be considered.

In its decision the Industrial Court states that no increase in wages is due as a result of increases in cost of living, but that the value of the work done must be the determining factor. The Court holds that: "The remuneration of the various classes of workpeople should, in ordinary circumstances, depend on the value of the work done, and the value of the work done depends upon the state of the market and the demand for the products of the workshop."

CANADIAN PARCEL POST REGULATIONS.

According to the customs regulations of Canada no goods exported to that country from the United States, whether sent by mail or otherwise, can be entered through the Canadian customs without certified invoices furnished by the exporter to the importer or his agent. The certified invoices must be furnished in triplicate, two copies being required for customs entry and the third for the use of the importer. The proper commercial designation of the goods must be set forth in all invoices. The invoices must show the marks and numbers on the packages, in such a manner as to indicate truly the quantities and values of the articles comprised in each package. Every invoice must contain a sufficient description of the goods, and in respect of goods sold by the exporter must show in one column the actual price at which the articles have been sold to the importer and in a separate column the fair market value of each article as sold for home consumption in the country of export. The "price" and "value" of the goods are to be stated as in condition packed ready for shipment at the time when and at the place whence the goods have been exported directly to Canada. But when the value of goods for duty purposes is determined by the Minister of Customs, the value so determined will be held to be the fair market value. The fact that packages of merchandise from the United States for Canada may be accompanied by customs declarations does not obviate the necessity for certified invoices being furnished by the exporter to the Canadian importer for use in making customs entry of the merchandise.

NEW TRADE PUBLICATIONS.

THE WELLMAN-SEAVER-MORGAN CO., CLEVELAND, OHIO, ISSUES a series of beautifully illustrated and remarkably clear "Bulletins," of which No. 48 deals with "Rubber Machinery." These bulletins show on one page a half-tone picture of a machine or installation, and on the page opposite a working blue-print giving the mechanical details. The rubber machinery includes the following: tire-applying press, rubber cracker and washer, rubber mixing mill, calender, rimming press, and hydraulic press vulcanizer. Other bulletins describe coal and ore handling machines, cranes, hydraulic turbines, hoisting and coke-oven machinery, and steel works and port and terminal equipment.

THE ALTENBURG TIRE EQUIPMENT CO., DAVENPORT, IOWA, AND Columbiana, Ohio, issues an extremely useful catalog of its products for the year 1920. The first half contains distinct pictures with detailed descriptions of all the machinery and tools used in tire repairing, while the last half conveys in clear language practical instruction, helped with many illustrations, in the modern methods of tire repairing.

"MILLER TIRE TRADE NEWS," THE HOUSE ORGAN OF THE MILLER Rubber Co., Akron, Ohio, makes its first appearance with the June number. It is a lively little sheet, giving a lot of information about rubber, besides news of the company's activities that interests the general public as well as the employes.

"CONVERSE FOLKS," THE OFFICIAL FACTORY MAGAZINE OF THE Converse Rubber Shoe Co., Malden, Massachusetts, to replace the "Triple Tread News," made its initial appearance June 1, 1920. It is to be published twice a month by a staff of Converse employes under the editorship of W. Sewall, and printed in the company's own printing plant. The first issue is a 40-page, well-illustrated paper of pocket size with a two-color cover. It contains much interesting factory news and many breezy personals, all well calculated to foster a feeling of cooperation, friendship, and loyalty throughout the Converse organization.

"THE WIGWAM," THE HOUSE PUBLICATION OF THE SPRECKELS "Savage" Tire Co., San Diego, California, is printed in Indian red, on cream-colored stock. Some of the departments are: "In Counsel with the Big Chief," "Factory Pow-Wow," "Squaw Squawks," "Savage Sports," "Many-Ha-Ha-Heap-Big Smileage Section," etc. The head of an Indian chief and a wigwam decorate the title-box on the front page.

THE COOPER-HEWITT ELECTRIC CO., HOBOKEN, NEW JERSEY, issues an artistic and expensive "Portfolio of Industrial Illumination," a large quarto pamphlet with 19 handsome illustrations, showing the light in operation in factory interiors. These include machine tool factories, motor works and cotton mills. The cover has a striking picture of the exterior of a mill lighted at night with the lights reflected in the waters of an adjacent pond.

THE NORTHERN RUBBER CO., LIMITED, GUELPH, ONTARIO, SENDS out its 1920-1921 catalog of "Partridge Rubber Footwear," profusely illustrated in color, showing its many lines of boots and shoes for lumbermen and fishermen, for sports and for city wear.

"RUBBER," A HANDY LITTLE MAGAZINE OF BOILED-DOWN INFORMAtion on rubber engineering and production, edited by Thomas P. Hallock and Charles C. Lynde (The Trade Press Co., Cleveland, Ohio), in the May number has an illustrated article by Mr. Lynde on overhead handling of tire molds, followed by other articles of rubber interest.

"THE STRONGHOLD," THE NEW MONTHLY PUBLICATION OF THE Rubber Products Co., Barberton, Ohio, is given over chiefly to factory news and to matters of interest to the employes. It contains some clever verse.

IN THE APRIL ISSUE OF THE "COLOR TRADE JOURNAL" APPEARS AN article by Frederic Dannerth, Ph. D., entitled "Coal-Tar Products Used in Rubber Industry." Dr. Dannerth lists eleven different coal-tar products used in rubber manufacture, and then discusses at some length the following topics: Formation of colored diazo compounds in rubber mixings; thinners for rubber compounds; porosity correctives; a coagulant for rubber latex; accelerators of vulcanization; industrial research on accelerators; influence of amino accelerators on health; devulcanizing agents; reclaiming waste rubber; black pigment for coloring compounds, and softening waste rubber.

"PRIMROSE," EDITED BY P. CAREL WIJNAND, THE FIRST RUBBER periodical in Holland, bids farewell to its readers in the mid-April number, as it is obliged to suspend publication on account of the increased demands of compositors and printers for higher wages, as well as because of the high prices for paper and other materials. It has been a valuable, original, and artistic paper in the seven years of its existence.

THE *Internationale Vereeniging voor de Rubber-Cultuur in Nederlandsch-Indie* (International Association for Rubber Growing in the Dutch East Indies), of Amsterdam, issues its sixth yearly report, for 1919, in Dutch and in English. Besides describing the activities of the society, the report discusses the labor difficulties in Java and Sumatra and the proposed export duty on rubber, and gives some interesting statistics on rubber production.

THE EDITOR'S BOOK TABLE.

"THE PREPARATION AND VULCANIZATION OF PLANTATION Pará Rubber." (D. Van Nostrand Co., 25 Park Place, New York City.)

THIS encyclopedic collection of articles on rubber by B. J. Eaton, J. Grantham and F. W. Day, the practical chemists of the Agricultural Department of the Federated Malay States, is

becoming hard to get, as its value has been recognized by rubber men everywhere. The book was reviewed in THE INDIA RUBBER WORLD February 1, 1919; the substance of the information it contains has been noted in these columns as the articles first appeared.

CANADIAN TRADE INDEX, 1920-1921. (THE CANADIAN MANUfacturers' Association, Inc., Toronto, Canada.) (Cloth, large octavo, 10½ by 7 inches, 832 pages and map.)

This trade index, the only one of its kind for Canada, is divided into three parts, and in a limited number of copies into four. First comes an alphabetical list, giving the name and address of every manufacturer in the Dominion and comprising 9,500 firms. Next comes the classified list of Canadian manufactures, comprising 8,445 items, with the names of the manufacturers. Following is the list in the French language of all these manufactured articles, with references to the number under which the English information and the manufacturers' names appear. In the limited edition a similar list in Spanish follows the French catalog. An excellent, official map of the Dominion of Canada, showing the transportation facilities, the trade routes and the natural resources of the various districts, is enclosed. The index is indispensable to those who desire Canadian business.

INTERESTING LETTERS FROM OUR READERS.

EAST AFRICAN RUBBER POSSIBILITIES.

TO THE EDITOR:

DEAR SIR:—At the present time, when there is such a large demand for rubber goods, it becomes a matter of paramount importance for those concerns engaged in the rubber industry to endeavor to obtain sufficient supplies of raw material in order to cope with the increasing demand for manufactured rubber goods.

The writer, who campaigned in German East Africa with a British native regiment, is of the opinion that the former German colony would make a valuable addition to the existing sources of crude rubber obtainable by American manufacturers. Already the vacated rubber plantations of former German owners have been taken up by other planters, and as the mandate given to Great Britain to govern this territory should not affect the "open door" policy in regard to trade and commerce with other countries, it should furnish the American rubber industry with the opportunity to tap these new resources and further increase the supply of crude material.

It was further noticed that a large amount of rubber was growing in Portuguese East Africa, especially in the Lugella district, where exceptionally large tracts were under rubber cultivation and which it is believed were owned by the Lugella Company. Large areas under rubber cultivation were also observed while passing through the territory administered by the Mozambique Company. Native labor is abundant and the cost on the plantations is of negligible importance, as in many cases natives are paid in calico and food.

The writer, who is not connected with the rubber industry in any way, is merely stating what he has seen in East Africa and would be satisfied if his observations may prove of more than passing interest to rubber manufacturers and possibly worthy of investigation. It would undoubtedly be a sound project for American manufacturers to get in touch with new planters in East Africa, more especially in the vast territory formerly known as German East Africa, and aggressive efforts ought to be made to obtain a portion of the rubber crops of that country as soon as they become ready for marketing.

JOHN NELSON,
Ex-Sergeant, King's African Rifles.

Holyoke, Massachusetts.

IN MEMORY OF A GREAT FRENCH AVIATOR.

TO THE EDITOR:

DEAR SIR: It is a year ago that the famous aviator, Jules Védrines, met his death in trying to accomplish his first voyage by airplane from Paris to Rome. He was popular throughout the world for his audacity, courage, and his exceptional qualities, and he was one of the most active and best mechanics in the victory of the air.

Jules Védrines has left his old mother, aged 71, his widow, and four children aged 10, 8, 7, and 5, and it is for their help that a committee has been formed which is patronized by members of the French Government and the notability of all the large nations, in order to provide for the needs of the family and to erect a monument in the place from which the celebrated aviator started his tragic flight.

The headquarters of the committee for subscriptions to the monument of Jules Védrines, is at 93 boulevard Beaumarchais, Paris. The subscriptions are to be addressed to the treasurer, Monsieur Georges Labastie, 7 Place de la Bastille (Paris IV–), France.

COMITÉ DE SOUSCRIPTION AU MONUMENT À LA MÉMOIRE DE L'AVIATEUR JULES VÉDRINES.

THE OBITUARY RECORD.

FOUNDER OF THE McGRAW TIRE & RUBBER CO.

EDWIN C. MCGRAW, founder and for ten years president of The McGraw Tire & Rubber Co. of Cleveland and East Palestine, Ohio, died at his southern home, Point View, Miami, Florida, on May 24, after an illness of several months. Mr. McGraw was born in Pittsburgh, Pennsylvania, in 1858, and became a member of the firm of J. A. McGraw Brothers, who were pioneers in the rubber roofing business, at the age of 23, engaging in brick making and the real estate and hotel business.

EDWIN C. MCGRAW.

In 1908 he secured the patent rights in the "vertical fabric thread tire," and in the following year decided to build a tire plant at East Palestine. This started by making eight tires a day; by 1919 its output was 5,000 tires and 6,000 tubes daily. It now manufactures only high grade tires, the McGraw fabric, cord and solid tires with the 5,000 mile guaranty. Mr. McGraw was also president of the Fidelity Trust & Mortgage Co. and a director of the Fidelity Bank and Trust Co. of Miami. He leaves his widow, a son, R. W. McGraw, and a daughter, Mrs. John Morgan, and also one brother, G. W. McGraw, Jr.

ERECTING ENGINEER FOR HUNTER DRY KILN CO.

Robert I. Monroe, erecting engineer for The Hunter Dry Kiln Co., Indianapolis, Indiana, died suddenly of heart disease Saturday, June 19, 1920, at his home in Indianapolis. Mr. Monroe became associated with the Hunter Dry Kiln Company shortly after its incorporation and, acting in the capacity of erecting engineer, had occasion to visit many of the well-known rubber

factories where he made numerous warm friends who appreciated his trustworthiness and strong personality. Mr. Monroe was thirty-seven years of age. His widow and four children survive him.

WAS NOT A CHRONOLOGICAL REFERENCE.

Our good friend, the learned editor of the *"Bulletin de l'Association des Planteurs de Caoutchouc,"* thus comments upon a recent article:

> "The very distinguished director of The India Rubber World, Mr. Henry C. Pearson, in telling the history of plantation rubber in the December number of that review writes: 'When the automobile industry entered on its glorious career, the demand for rubber was such that it rose from its normal price of $1.25 to $3.00 a pound. The dividends thus obtained from the rubber estates—200 and 300 per cent—excited the British capitalists, then in a less degree the Dutch and the Belgians, and the "Rubber Fever" began.' Our estimable confrère rather mixes up dates. In our pamphlet, 'Les intérêts Belges dans les Sociétés de Caoutchouc en Malaisie et au Congo,' published at the end of 1919, we told that the Belgians had become interested in rubber plantations as early as 1887 by creating the syndicate of Malaysia. All this before the 'Rubber Craze' of which Mr. Pearson speaks."

We hasten to acknowledge that our friendly critic is right regarding the early appreciation on the part of the Belgians of the value of *Hevea* planting in the Far East. It was not the intention to seem to contradict this. The point was that the majority of the plantations installed during the rubber craze were financed by the British. To this we believe our amiable confrère will agree. (THE EDITOR.)

DETERMINATION OF THE SOFTENING OF PLASTIC MATERIALS.[1]

IT HAS long been customary to compare plastic materials by such tests as melting point, twisting point, penetration, etc. These tests are valuable, but are not easily reproduceable and do not give any indication of the various changes taking place under heat. It is for this reason that the following method has been adopted.

The instrument used for carrying out this test was the Widney Resiliometer, illustrated in Fig. 1, which was adapted so that with a presser foot, C, of ⅛-inch diameter, the weight, I, gave a pressure of 200 pounds per square inch. The metal base, D, was replaced by ebonite, in order that loss of heat through conduction should be as little as possible. The large dial, A, is graduated in 100 divisions, each 1/1000-inch, so that one revolution of the larger pointer or hand is equivalent to an elevation of 1/10-inch travel by the presser foot. When the material is more than 1/10-inch thick the hand will revolve more than once around the dial, the number of revolutions being indicated on the small dial B.

The operations are as follows: the thickness is first determined by placing the sample between C and D, the normal thickness being read off on the dial. The spring-catch, E, is now released, holding the weight, I, and the quadrant, F, allowed to swing until the pressure is put on the upper end of presser foot, G, at the top of dial. This forces the foot into the material until it reaches the limits of compression as the result of the weight applied. The reading on the dial at that time is taken and compared with the normal or original thickness. For example, a sample having a normal thickness of 100 mils. (one mil. = 1/1000-inch) gave a reading at 200 pounds per square inch of 25, namely at this pressure the material would show a compression of 25 per cent.

A sample of convenient size for testing is 2.5-inches by 0.5-inch by 0.100-inch thick and is easily obtainable by aid of a small mold, the shape of the sample permitting several tests to be determined throughout its length.

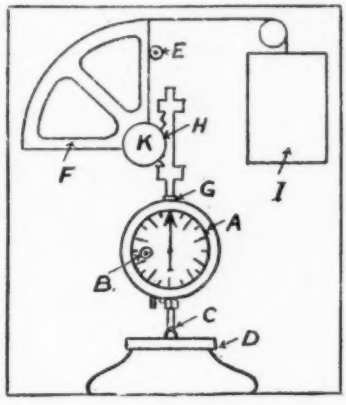


FIG. 1.

A, DIAL. B, REVOLUTION COUNTING DIAL. C, PRESSER FOOT. D, BASE. E, SPRING CATCH. F, QUADRANT. G, UPPER END OF PRESSER FOOT. H, TRANSMISSION PLUNGER. I, WEIGHT. K, TOOTHED PIVOT.

"SOFTENING" THE TEST PIECE.

The test piece, which should be molded about twelve hours before testing, is placed in water at 60 degrees F. or lower, depending on the sample, and maintained at the required temperature for a few minutes to ensure that the sample is uniformly heated throughout. It is then quickly taken out, its compression taken and replaced in the bath, the temperature of which is then raised at the rate of about 4 degrees F. a minute to the next reading, the sample being tested at every 10 degrees F.

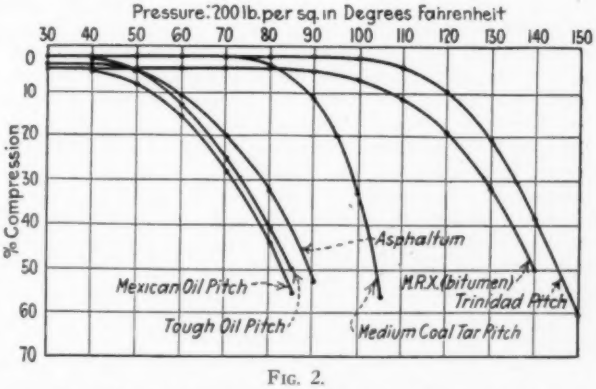

Pressure: 200 lb. per sq. in Degrees Fahrenheit
30 40 50 60 70 80 90 100 110 120 130 140 150
0 10 20 30 40 50 60 70
% Compression
Asphaltum
Mexican Oil Pitch
M.R.X. (bitumen)
Trinidad Pitch
Tough Oil Pitch
Medium Coal Tar Pitch

FIG. 2.

GRAPH SHOWING INFLUENCE OF TEMPERATURE ON COMPRESSION ON VARIOUS PITCHES.

When dealing with complex substances which have no definite constant, the value of these curves will be at once apparent. The author has found the curves most instructive and of great assistance in controlling running batches of material.

THE MERCHANTS' ASSOCIATION ELECTS NEW MEMBERS.

The Merchants' Association, New York City, on June 21, 1920, elected to membership the following individuals of interest to the rubber and allied trades: Edward C. Beard, 106 Duane street, New York City, assistant treasurer of The Beacon Falls Rubber Shoe Co., Inc., Beacon Falls, Connecticut; Frank Waldo, E. M. and F. Waldo, 11 Broadway, New York City, manufacturers and importers of dry colors for the rubber and allied trades; B. L. Atwater, 1889 Metropolitan avenue, Brooklyn, New York, vice-president of William Wrigley, Jr., Co., Brooklyn, chewing gum manufacturer.

BUY WAR SAVINGS STAMPS—BUILD FOR AMERICAN PROSPERITY and your own success.

[1] "The Softening of Plastic Materials Determined by the Widney Resiliometer and Expressed Graphically." By Alan Speedy. "Journal of the Society of Chemical Industry," January 31, 1920.

STORAGE BATTERY DEVELOPMENT ON THE PACIFIC SLOPE.

Special Correspondence.

JUST as the rapid and extensive distribution of automobiles on the Pacific Coast has within a few years resulted in the establishment in this section of branch factories to supply the urgent demand for cars, and has latterly stimulated the interest of enterprising tire makers in the trade possibilities of the Coast, with the resultant creation of an industry here that has already assumed huge proportions, so the widespread and ever-increasing use of motor cars in the territory between the Rockies and the western boundary of the United States has proved a powerful spur to the sale and production in this section of that automobile essential—the hard, rubber-celled storage battery.

Up to within a comparatively recent date, all the batteries used on cars west of the Rockies came from the East and Mid-West; but now, while the older companies, through about 250 well-equipped service and replacement stations on the Coast, are holding their own very well, considerable inroads are being made into the field by some ten aggressive concerns that started here but a short time ago to manufacture electrical accumulators, many of the latter comparing well in efficiency with the products of the bigger and older factories nearer the Atlantic seaboard. Not only do these "youngsters" expect to get a considerable share of the Coast business, but they are also contending for a fair portion of the $120,000,000 worth of battery replacements which, it is estimated, will be the nation's need in 1920.

Some idea of the opportunities for battery men on the Coast may be gleaned from the fact that on December 31, 1919, there were registered in California 493,463 automobiles (including trucks), in Oregon 83,332, and in Washington 164,080; or a total of 740,875 for the states bordering the Pacific. But as the Pacific coast territory is ordinarily held to includes all the states quite west of the Rockies, Idaho should be added with 42,271, Nevada with 9,305, Arizona with 28,979, and Utah with 34,749; or a total for those four states of 115,304, which, added to the 740,875 in the first three states named, would make a grand total of 856,179 automobiles registered at the beginning of this year in the Pacific slope states. Experts in the trade figure that there has been an increase of at least 10 per cent since the date given, which would bring the total number of motor cars now in use in the territory named up to 941,747, as compared with an estimated present total in the entire United States of fully 8,000,000, the actual registration on March 1, 1920, having been computed by the Automobile Club of Southern California as being 7,718,020.

It might be added that no small impetus has been given to the storage battery business on the Pacific slope, as well as throughout the entire country, by the decision of the makers of the most popular low-priced cars in the United States to add to their 1920 models a complete electric lighting and starting equipment, and that new laws in many of the states now insist on motorists having lights that can be given efficiently only by means of storage batteries.

But storage batteries are used not only for lighting, starting, and ignition on gasoline automobiles. They are needed in ever-increasing quantities for propeling and lighting electric motor cars, for lighting and starting airplanes, launches, and fishing boats, for isolated house-lighting stations, for steam railroad switchwork and signaling (two being used on every block tower), for lighting steam railroad trains, for lighting street railway cars and for propulsion on many lines, for lighting ocean-going ships, for operating railroad and other draw-bridges, for numerous submarine boat needs, for starting and igniting stationary gas engines, for fire alarm service, for mine locomotives, for mine-workers' headlights, for blasting, and in radio and telephone work. So, too, are "stand-by" and "booster" storage batteries largely used in electric power and lighting stations for regulating the load, absorbing the surplus production of current when the demand is light and releasing it when the demand is extra heavy, for equalizing momentary fluctuations due to irregular running of generators, for regulating voltage in certain classes of service, for controlling current supply on long feeders of street railway lines, and for emergency service, providing, as it were, a reservoir of energy to avert a complete shut-down of a station in the event of accident. One of the many recent minor applications of a storage battery is in connection with the propulsion of row-boats, the small gasoline engines much used for that purpose being supplanted by electric batteries.

Not content with merely merchandising and supplying service, the leading manufacturers of storage batteries on the Coast are carrying on considerable research work which they believe will result in increased efficiency and greater usefulness of an electrical device that is second in importance only to the dynamo itself, and that has even a much larger range of utility than the electrical generator to which it is invariably linked. Having made the hard rubber cells quite as light as the inclosing wooden case, they are now trying to reduce the weight of the lead plates and to reduce the bulk of the acid fluid or electrolyte without lessening the amperage or current quantity to make the perforated hard rubber separators used between the plates in certain types of batteries even more "porous" without loss in rigidity, to automatically c overcharge and overheating; and particularly are the experimenters endeavoring to overcome one of the greatest drawbacks of the storage battery—the long period of charging cells at stations, usually averaging from twelve to sixteen hours, and which period is always in direct ratio to the swiftness with which the battery has been discharged.

LIGHT AND CALCINED MAGNESIA.

Magnesia is an ingredient very commonly used in vulcanization, where it acts as the best mineral accelerator. It comes in two forms, light and calcined. These varieties in the dry state have very different volumes, but their specific gravities determined in paraffine oil are practically the same. The greater relative volume of light magnesia is not due to a finer state of pulverization than that of heavy magnesia. Its greater volume and apparent lighter gravity is due to its special structure which is little known to rubber workers and upon which too much emphasis cannot be placed, as all the qualities of the light form of magnesia are dependent on this particular feature of its structure.

To give a simple idea of the difference existing between two materials of different volumes, conceive one as a sphere and the other as a cylinder. A thousand spheres will occupy in any receptacle less space than a thousand cylinders of identically the same volume. One may thus liken a molecule of heavy magnesia to a sphere and a molecule of light magnesia to a cylinder. If these spheres and cylinders are placed in paraffine oil they will displace equal volumes. Thus, 100 grams of light magnesia occupies 763, cc. in a graduated flask while 100 grams of heavy magnesia occupies only 141 cc. If of two graduated flasks, each containing 100 cc. of paraffine oil, one adds equal weights of light magnesia to one and heavy magnesia to the other, then heats the flasks till all the air adhering to the particles of the magnesia has been expelled, it will be found on cooling that in the flask containing the heavy magnesia the volume occupied by the oxide is 129 cc. and in that containing the light magnesia the volume occupied by the oxide is 131 cc. Both volumes are practically the same and the marked difference of apparent volumes which exists between the two magnesias is due entirely to the occluded air which is different for each one.

THE AUTOMOBILE BUSINESS IN BRITISH MALAYA IS LARGELY IN American hands. Large stocks of parts and tires are kept and one firm maintains repair shops and sales rooms in Singapore, Kuala Lumpur, Ipoh and Penang.

News of the American Rubber Industry.

DIVIDENDS.

THE American Chicle Co., New York City, has declared its regular quarterly dividend of one and one-half per cent, payable July 1, on preferred stock of record June 19, 1920.

The American Zinc, Lead & Smelting Co., New York City and St. Louis, Missouri, has declared a dividend of $1.50 per share, payable August 2 on preferred stock of record July 15, 1920.

The Apsley Rubber Co., Hudson, Massachusetts, has declared its semi-annual dividend of three and one-half per cent, payable July 1 on preferred stock of record June 26, 1920.

The Brunswick-Balke-Collender Co., Chicago, Illinois, has declared its quarterly dividend of one and three-quarters per cent, payable July 1 on preferred stock of record June 20, 1920.

E. I. du Pont de Nemours & Co. (incorporated), Wilmington, Delaware, has declared a dividend of one and one-half per cent on its debenture stock, payable July 20 on stock of record July 10; also a quarterly dividend of four and one-half per cent and a stock dividend of $2.50 a share, both payable June 15 on stock of record May 28, 1920.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has declared a quarterly dividend of 75 cents per share on its stock which has a par value of $25, payable July 1 on stock of record June 15. This is the second dividend, the first having been paid three months ago. The company has also declared a quarterly dividend of $1.75 a share, payable July 1 on first preferred stock of record June 15, 1920.

The Globe Rubber Tire Manufacturing Co., New York City, has declared a stock dividend of 10 per cent, payable July 1 on stock of record June 30, 1920, being the second 10 per cent stock dividend declared this year.

The Goodyear Tire & Rubber Co., Akron, Ohio, has declared a stock dividend of 150 per cent, to be paid from an accumulated surplus of $43,000,000.

The Habirshaw Electric Cable Co., Inc., Yonkers, New York, has declared a quarterly dividend of 37½ cents on outstanding stock of no par value, payable July 1 on stock of record June 20, 1920.

The Kelly-Springfield Tire Co., New York City, has declared a quarterly dividend of $1.50 per share, payable July 1 on its six per cent preferred stock of record June 15, 1920.

The Keystone Tire & Rubber Co., Inc., New York City, has declared its quarterly dividend of three per cent, payable July 1 on stock of record June 15, 1920.

The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio, has declared a quarterly dividend of one and three-quarters per cent, payable July 1 on preferred stock of record June 20, 1920.

The Madison Tire & Rubber Co., Inc., New York City and Buffalo, New York, has declared dividend No. 3, of 2 per cent, payable July 1 on preferred stock of record June 25, 1920.

The Martin Tire Corporation, 903 Sixth avenue, New York City, formerly The Triplex Tire Corporation, on March 10, 1920, declared a four per cent semi-annual dividend, payable March 20.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has declared dividends of one and three-quarters and one and one-half per cent, respectively, on preferred and common stock of record June 15, payable June 30, 1920.

The Salmon Falls Manufacturing Co., Boston, Massachusetts, declared a quarterly dividend of two and one-half per cent, payable June 1 on stock of record May 17, 1920.

The United Shoe Machinery Corporation, Boston, Massachusetts, has declared the following dividends: one and one-half per cent on preferred capital stock; $1.50 per share on common 1920.

FINANCIAL NOTES.

The following financial statement of The Mason Tire & Rubber Co., Kent, Ohio, reflects the absorption of The Mason Cotton Fabrics Co., and the profit and loss statement shows net profits for the six months, amounting to $689,000, that are three times as great as for the entire preceding twelve months.

Earnings of the newly-acquired textile division do not show as heavily as they will later in the year as that division has been in operation only a short time.

Balance Sheet, April 30, 1920.

ASSETS.

Current:		
Cash balances	$803,919.58	
Accounts and notes receivable, mdse. $998,776.56		
Less reserves 50,739.94	948,036.62	
Accounts receivable, stock	85,112.00	
		$1,837,068.20
Inventories:		
Finished goods at factory and branches	$1,065,499.11	
Work in process	109,773.84	
Raw material and supplies	1,070,381.07	
		2,245,654.02
Miscellaneous investments		104,500.00
Fixed:		
Real estate, buildings, etc	$1,193,941.35	
Machinery and equipment	1,253,466.67	
Total	$2,447,408.02	
Less reserves for depreciation	92,339.50	
		2,355,068.52
Deferred charges:		
Miscellaneous		133,826.59
Good will, trade marks, etc	$2,169,121.84	
Less capital surplus	840,463.75	
		1,328,658.09
		$8,004,775.42

LIABILITIES AND CAPITAL.

Current:		
Accounts and bills payable	$405,228.17	
Accrued taxes and expenses	50,098.64	
		$455,326.81
7% serial gold notes		750,000.00
Reserves:		
For income taxes	$19,651.30	
For tire adjustments	76,193.11	
Miscellaneous	22,924.78	
		118,769.19
Capital:		
7% preferred stock	$5,185,620.00	
Common stock "A"	500,000.00	
Common stock "B"	343,521.25	
		6,029,141.25
Surplus:		
Auditor's balance November 1, 1919	$45,671.51	
Income tax and other adjustments	32,581.57	
Profits for half year	689,479.02	
Total	$767,732.10	
Less dividends $102,481.11		
Less adjustments 13,712.82	116,193.93	
		651,538.17
		$8,004,775.42

Contingent liability on trade acceptances discounted $1,254,713.85.

PROFIT AND LOSS STATEMENT, SIX MONTHS ENDED APRIL 30, 1920.

Gross sales for period	$3,454,586.89
Less discounts, returns and corrections	425,121.08
Net sales	$3,029,465.81
Less cost of goods sold	2,013,350.35
Gross profit	$1,016,115.46
Less selling and administrative expenses	554,567.08
Tire division, net profit	$461,548.38
Textile division, profit, material sales	227,930.64
Total net profits for six months	$689,479.02

The General Electric Co., Schenectady, New York, at a special meeting of its stockholders, voted to increase the capital stock from $125,000,000 to $175,000,000 in order to obtain additional working capital from time to time.

The Goodyear Tire & Rubber Co., Akron, Ohio, has offered $20,000,000 seven per cent cumulative preferred stock and $10,000,000 common stock. With this new financing the company will have outstanding $66,844,100 of preferred and $61,890,000 of common stock. The total net assets of the company from the balance sheet as of April 30, 1920, amounted to more than $115,000,000. The good will, patents, trade rights and trade names are capitalized at $1, although the management believes that these are the most valuable assets of the company. Business for the six months to May 1, 1920, exceeded that of the preceding fiscal year for the same period by 59.3 per cent. An estimate based on six months' operation indicates net earnings for fiscal year ended October 30, 1920, approximating $30,000,000. Total business for this year will approximate $225,000,000 as compared with $168,000,000 in the preceding fiscal year.

The American Rubber & Tire Co., Akron, Ohio, has announced the issuance of $600,000 worth of preferred stock to provide capital for expansion.

The Fisk Rubber Co. has already earned two-thirds as much as for all of 1919 and by midsummer will probably have passed the $5,000,000 mark.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, has issued its annual report for the year ended March 31, 1920. The gross earnings show sales billed amounting to $136,052,091.63 with a net manufacturing profit of $15,079,830.10, while the net income available for dividends and other purposes amounts to $15,206,341.27. The surplus for the year was $43,435,763.55, being an increase of $7,488,031.25 over the surplus for the year before. Dividends at the rate of eight per cent per annum were declared quarterly throughout the year.

The New Jersey Zinc Co., Inc., New York City, a New Jersey corporation, has filed with the Secretary of State at Trenton a certificate increasing its capital stock from $35,000,000 to $50,000,000, consisting of 500,000 shares at $100 par value.

NEW INCORPORATIONS.

Ackurate Rubber Co., Inc., June 5 (New Jersey), $100,000. C. V. Ackerman, 85 Clinton avenue; J. Swenson, 664 Main avenue; J. S. Swenson, 189 Madison avenue—all of Clifton, New Jersey. Principal office, 85 Clinton avenue, Clifton, New Jersey. Agent in charge, C. V. Ackerman. To manufacture, buy and sell tape, wrappings, etc., for insulating purposes, and rubber compounds and substitutes.

Acme Auto Supply Co., Inc., June 10 (New York), $5,000. M. Trachtenberg, 237 South Second street, Brooklyn; H. and E. Weinstein, both of 102 Chambers street, New York City, both in New York. To do auto tire business.

Allweather Top & Body Co., Inc., The, March 17 (New York), $500,000. J. W. Hayes, president and general manager; H. Anderson, vice-president; C. E. Mellen, secretary; F. Caley, treasurer; A. R. Davis, director. Principal office, 6545 Carnegie avenue, Cleveland, Ohio. To manufacture "Allweather" auto tops.

Ambuhl-Teitsch-Choffiet Rubber Co., Inc., June 11 (New York), $3,000. R. Ambuhl, 40 Spring avenue; M. Teitsch, 470 Second street, both of Troy; A. Choffiet, Green Island—both in New York. Principal office, Green Island, New York. To manufacture rubber tires and rubber goods.

Anheir Rubber Co., May 27 (Delaware), $500,000. R. Thistle; A. R. Myers; R. J. Gorman—all of New York.

B. B. Truck Tire Corp., June 11 (New York), $25,000. E. Page; M. Meggers; D. J. Fitzsimons—all of 777 Bedford avenue, Brooklyn, New York. Principal office, Brooklyn, New York.

Bergen Rubber Co., May 14 (New Jersey), $100,000. C. F. Teigeler, president; J. R. Flanagan, vice-president and sales manager; A. J. Teigeler, secretary; H. L. Teigeler, treasurer. Principal office, 42 Paterson avenue, East Rutherford, New Jersey. To manufacture inner tubes.

Common-Sense Suspender Co., Inc., June 2 (New York), $15,000. L. B. Keegan; T. Arter; E. M. St. John—all of Ithaca, New York. Principal office, Ithaca, New York. To manufacture elastic goods.

Consolidated Rubber Corp., May 24 (New York), $5,000,000. R. B. and E. W. Whiting; J. P. Stang—all of Pittsburgh, Pennsylvania.

Cord Tire Corp., May 12 (Delaware), $1,000,000. T. L. Croteau; M. A. Bruce; S. E. Dill—all of Wilmington, Delaware. To deal in crude and manufactured rubber and articles made of rubber.

Corkhill-Falk Co., Inc., May 20 (New York), $10,000. S. A. and G. H. Corkhill, both of 185 Raines Park; B. Falk, 238 Alameda street—both of Rochester, New York. Principal office, Rochester, New York. To do an auto tire business.

DuBois Rubber & Tube Co., February 5 (Tennessee), $100,000. J. D. Du Bois, president; L. H. Lightfoot, vice-president; P. B. Whitaker, secretary and treasurer; M. N. Whitaker, J. A. Stith, directors. Principal office, 315 Volunteer State Life Building, Chattanooga, Tennessee. To manufacture a compression inner tube, also automobile casings.

Empire Rubber Products Corp., May 24 (New York), $250,000. F. R. Hansell; J. V. Pimm; E. M. MacFarland—all of Philadelphia, Pennsylvania. To manufacture tires and tubes.

Eureka Tire Rebuilding Co., The, June 9 (New Jersey), $150,000. H. C. Ferry; I. G. Mercer, both of 327 Paulison avenue; J. Doremus, 170 Bloomfield avenue—both of Passaic, New Jersey. Principal office, 20 Howe avenue, Passaic, New Jersey. Agent in charge, H. C. Ferry. To manufacture, repair, rebuild tires and all other rubber goods.

Goddard Rubber Co., March 24 (Wisconsin), $10,000. D. W. E., D. C., S. H. Goddard. Principal office, Watertown, Wisconsin. To manufacture, buy and sell all kinds of rubber or composition goods.

Harloe Tire Co., May 21 (Delaware), $500,000. N. Butler, Wilmington, Delaware; M. Harloe, Winchester; N. King, Clifton Station, both in Virginia. To manufacture automobile tires.

India Tire Co., May 18 (Missouri), $100,000. F. E. McLarty, president; G. T. Lownsbery, vice-president; H. Holzhauer, vice-president; W. E. Brown, secretary and treasurer. Offices at Kansas City, Missouri, and Dallas, Texas. To distribute India tires and tubes.

Kleistone Rubber Co., Inc., April 12 (Massachusetts), $200,000. G. Marsh; M. E. Buchanan, both of 55 Congress street; E. H. Bell, 31 State street—both in Boston, Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal in boots, shoes, rubbers, soles, heels and other parts of rubber boots and shoes, together with articles of any kind made wholly or partially of rubber.

Leatherman Tire & Rubber Co., March 19 (Washington), $2,000,000. R. H. Huntoon, Seattle, Washington. Principal office, Seattle, Washington. To manufacture, buy, sell, import, export and generally deal in rubber and all goods of which rubber forms a part.

Lehigh Tire & Supply Corp., June 3 (New York), $1,000. W. C. Murphy; D. C. Brewster; H. S. Evans—all of 40 Cedar street, New York City. Principal office, Brooklyn, New York. To deal in tires and auto supplies.

Long Island Tire Co. of New York, Inc., June 12 (New York), $10,000. A. Samuels, 121 Ellery street; I. Betchley, 692 Hancock street; M. Hershkowitz, 61 Stuyvesant avenue—all of Brooklyn, New York. Principal office, Brooklyn, New York. To manufacture tires.

Lorimer Manufacturing Co., Inc., April 13 (New York), $3,000. A. Levy; P. Smolan; C. Bennitt—all of 111 Broadway, New York City. To manufacture articles of glass, amber, ivory, celluloid, rubber, etc.

Majestic Sales Corp., June 19 (New York), $10,000. R. H. Syfers; E. B. Oscars, both of Indianapolis, Indiana; G. W. Chapman, Woodward Hotel, New York City. To manufacture tires and rubber goods.

Manhattan Garter Co., Inc., June 11 (New York), $20,000. N. and G. Englehardt, both of 2116 84th street, Brooklyn, New York; M. Kirschenbaum, Elizabethport, New Jersey. To manufacture garters, suspenders, etc.

McWade Tire & Rubber Co., The, March 31 (Ohio), $5,000,000. J. H. McWade, president; C. C. Cox, vice-president; H. G. Vincent, secretary and treasurer. Principal office, Garrettsville, Ohio. To manufacture casings and tubes.

Page Truck Tire Corp., June 14 (New York), $25,000. E. Page; M. Meggers; D. J. Fitzsimons—all of 777 Bedford avenue, Brooklyn, New York. Principal office, Brooklyn, New York. To manufacture auto tires.

Passaic Rubber Co., May 6 (New Jersey), $100,000. H. C. Mathey; J. W. Partington; W. Greengrass—all of Passaic, New Jersey. Principal office, 625 Main avenue, Passaic, New Jersey. Agent in charge, W. Greengrass. To buy, sell and manufacture mechanical rubber goods and insulating tapes, of every kind and description.

Philadelphia Insulated Wire Co., April 29 (Pennsylvania), $250,000. T. R. Topley, Llanerch; W. Lilley; E. Kippak; both of Philadelphia—both in Pennsylvania. Principal office, Philadelphia, Pennsylvania. To manufacture insulated wire.

Quality Rubber Co., March 27 (New Jersey), $20,000. M. Mandel; R. Studt; L. Kozma; S. Mandel; S. C. VanCleef—all of New Brunswick, New Jersey. Agent in charge, S. C. VanCleef. To manufacture, buy, sell, produce and deal in crude, refined and manufactured rubber, gutta percha, chicle, Pará and other gums, etc.

Queens Scrap Rubber Co., Inc., June 10 (New York), $10,000. N. Keddel, 706 Riverside Drive; F. Fischer, 309 Broadway; R. Forman, 145 West 117th street—all in New York City. To manufacture scrap rubber and tires.

Royal Tire & Rubber Co., May 25 (Massachusetts), $50,000. L. S. Taylor, Lynnfield; J. L. Layne, 16 March avenue, West Roxbury; W. G. Burns, 80 Columbia Road, Dorchester—all in Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal in tires for automobiles.

Simonsen-Denker, Inc., June 1 (New York), $10,000. P. H. Simonsen, president; H. A. Vieu, vice-president; W. L. Denker, secretary and treasurer. Principal office, 561 Washington street, New York City. To sell Republic tires.

Standard Tire Stores Co., Inc., June 4 (New York), $200,000. M. Cohen, 1845 Seventh avenue; A. Jaffe, 2126 Vyse avenue; J. Nemerow, 362 Fifth avenue—all of New York City.

Sullivan & Sons Shoe Co., J. E., May 6 (New Jersey), $500,000. C. R. Allen; E. M. Hudson; I. M. Strang—all of 317 Market street, Camden, New Jersey. Principal office, 317 Market street, Camden, New Jersey. To manufacture, buy, sell boots, shoes, rubbers, etc.

Superior Vulcanizing Works, Inc., June 16 (New York), $12,000. C. H. May, 1530 Main street; H. Groegor, 1526 Main street; J. A. Christian, 206 Oxford avenue—all of Buffalo, New York. Principal office, Buffalo, New York. To do tire repair work, etc.

Tire Mould Corp., May 22 (New York), $20,000. S. I. Prager, 100 St. Nicholas avenue; J. A. Strauss, 522 West 157th street, both of New York City; R. R. Garfield, 2950 West 32nd street, Brooklyn, both in New York. To manufacture tires and tire moulds.

Tire Rebuilding Co., Inc., May 28 (New Jersey), $50,000. C. P. Kunzman, president; E. J. Fendl, secretary and treasurer. Principal office, 1110 Elizabeth avenue, Elizabeth, New Jersey. To rebuild, vulcanize and repair tires and tubes.

United Tire Stores Co., May 5 (New Jersey), authorized capital stock of 50,000 shares without any stated or par value. Isaac, Hermand and Samuel Fineburg; A. P. Jemison—all of Trenton, New Jersey. Principal office, 10 East Hanover street, Trenton, New Jersey. Agent in charge, H. Fineburg. To import, buy, sell and deal in automobiles, bicycles, motorcycles, etc.

Usona Tire Corp., May 29 (New York), $75,000. S. Jacobs, 540 West 159th street, New York City; B. Levy, 234 Pulaski street; B. Swiryn, 892 Dekalb avenue, both of Brooklyn—both in New York. To manufacture tires.

Usow Rubber & Mfg. Co., February 11 (Wisconsin), $100,000. A. D., J. and J. L. Usow—all of Port Washington, Wisconsin. Principal office,

Port Washington, Wisconsin. To rubberize fabrics and to manufacture rubber cement.

Vacuum Rubber Heel Corp., May 24 (New York), $50,000. M. Dusel, 45 Gesl street; F. X. Muller, 26 Lyth street; E. J. Whissel, 685 Utica street—all of Buffalo, New York. Principal office, Buffalo, N. Y.

Vulcweld Tire & Rubber Co., April 19 (Pennsylvania), $100,000. W. C. Walsh, president and purchasing agent; E. W. Potteiger, vice-president; J. A. Maney, secretary; E. Smith, treasurer. Principal office, Pottstown, Pennsylvania. To rebuild tires.

Wadsworth Sales Co., Inc., May 28 (New York), $20,000. E. J. Wadsworth, president; W. T. Leonard, vice-president; W. J. McDonald, treasurer; P. F. Acer, secretary. Principal office, 16 Court street, Brooklyn, New York. To distribute automobile tires, tubes and accessories.

Warner-Johnson Tire Co., The, April 15 (Ohio), $15,000. S. B. Warner, president; W. T. Richards, vice-president; C. E. Lytle, secretary; S. E. Johnson, treasurer; W. H. Johnson, general manager. Principal office, Canton, Ohio. To distribute Pennsylvania Vacuum cup tires.

Weartex Rubber Co., March 31 (Pennsylvania), $25,000. E. J. Hugo; G. R. Saleman, both of Philadelphia: I. Schulhoff, Uniontown—both in Pennsylvania.

Youngstown Rubber Products Co., The, April 3 (Ohio), $10,000. J. T. Harrington; U. C. Deford; J. P. Huxley; N. A. Emery; D. J. Lynn. Principal office, 617 Market street, Youngstown, Ohio. To distribute tires, etc.

Zeglen Tire & Rubber Co., Inc., January 16 (Illinois), $500,000. J. P. Drish, acting president and vice-president; F. J. Kolodzinski, secretary and treasurer. Principal office, 706 Oxford Building, 118 North La Salle street, Chicago, Illinois. To manufacture tires.

A SUCCESSFUL ORGANIZER OF RUBBER COMPANIES.

WILLIAM WALLACE WILDMAN, the well-known organizer and manager of successful rubber companies, was born in Zanesville, Ohio, February 11, 1872. During his youth in Zanesville he attended the common and high schools, and after leaving school he worked in his father's furniture store. Later he became a member of the firm of J. B. Wildman & Sons. In 1891 he moved to Chicago, and was for six months in the wholesale house of Marshall Field & Co. His next connection was with the National Tube Works in Chicago until that company was consolidated with the Crane Company. He then went with James B. Clow & Sons in the same line of business, and remained with that firm for five years.

WILLIAM W. WILDMAN.

In 1897 Mr. Wildman entered the rubber field, joining the firm of Morgan & Wright as assistant superintendent of the mechanical rubber goods department in the Chicago factory. Three and a half years later he took charge of the sales of mechanical rubber goods, the compilation of catalogs, and the training of traveling salesmen in those lines. He was employed in that capacity for about four and a half years. When Morgan & Wright were then taken over by the Rubber Goods Manufacturing Company, Mr. Wildman resigned and went with the Milwaukee Rubber Works Co. When that company became involved in financial difficulties he conducted the business under the receivership for two years. After the first three months he made money for the company, and later organized the Federal Rubber Co., which purchased the assets of the old concern. Mr. Wildman was made general manager of the Federal company. After the plant had been in operation about a year he resigned and went to Akron.

Having developed and perfected a patented process for devulcanizing rubber scrap, he organized at Akron, in 1908, the United Rubber Co., which bought the plant of the old Aladdin Rubber Co., located in West Barberton, for the purpose of manufacturing reclaimed rubber.

When Mr. Wildman engaged in rubber reclaiming it was with the idea that as soon as the business was firmly established a larger and separate company should be formed for the manufacture of rubber goods. Thus he brought about the incorporation of The Portage Rubber Co. in 1910. Mr. Wildman was general manager from the start and subsequently was chosen president. He remained with the company until the fall of 1919, when he resigned and formed the Wildman Rubber Co. of Detroit, of which he is president. It is capitalized at $10,000,000, and is building a big plant at Bay City, Michigan, preparing to turn out 2,500 tires and 5,000 tubes a day.

Mr. Wildman is a 32nd-degree Mason, resides in Detroit and is a member of the Akron and Barberton Chambers of Commerce and the Detroit Board of Commerce, the Akron City Club, and the Fairtown Heights Golf Club. In Detroit he is a member of the Fellowcraft Club and the Birch Hill Country Club. Three of his brothers, Banks J. Wildman, Theodore T. Wildman and Joseph W. Wildman, are, respectively, secretary, assistant sales manager and Chicago district manager of the Portage Rubber Co.

PERSONAL MENTION.

Howard H. McGee was born in Hartford, Connecticut, and in the early eighties his father, the late C. Thornton McGee, purchased the druggists' sundry business of the John W. Gray Co., whose factory subsequently became the Hartford Rubber Works Co. In 1900 Mr. McGee entered the employ of the Seamless Rubber Co., New Haven, Connecticut, starting in the factory, and after two years' inside experience he represented the firm in the New England territory. In 1905, he was made manager of the Chicago office. Two years later, the Seamless Rubber Co. sent him to Europe to investigate trade conditions. After representing Davol Rubber Co. for several years in the south, Mr. McGee accepted the management of the druggists' sundries department of Ajax-Grieb Rubber Co., and for the last five years he has been connected with the United States Rubber Co.

HOWARD H. MCGEE.

Dr. Frederic Dannerth, the well-known rubber chemist, who last winter gave a series of lectures in Newark on corporation chemistry, has again established his office as consulting chemist in Newark, New Jersey.

S. V. Norton, for fifteen years with The B. F. Goodrich Co., Akron, Ohio, has resigned to accept the position of service manager of the General Motors Truck Co., Pontiac, Michigan, effective July 1, succeeding H. L. Beckwith, resigned.

R. L. Armstrong has been appointed manager of the Omaha branch of the Pennsylvania Rubber Co., Jeannette, Pennsylvania. He succeeds Dan McAvoy, resigned.

E. H. Watson, 98 Park Place, New York City, American representative of Alfred Smith, Limited, Manchester, England, manufacturer of chemicals for the rubber trade, is at present in England but expects to return to New York about the middle of July.

John H. Mills has been elected vice-president of the Hilo Varnish Corporation, Brooklyn, New York, which manufactures a flexible varnish for rubberized fabrics. Mr. Mills has been with the Hilo company for thirty-five years and for some time has been a member of the board of directors.

C. H. Connelly has been appointed southwestern manager of The Rubber Products Co., Barberton, Ohio, with headquarters at Kansas City, Missouri. He will control the territory from Nebraska to the Gulf and from St. Louis to Denver.

George B. Kretsinger has been appointed office manager of the Kansas City branch of The Rubber Products Co., Barberton, Ohio, effective July 1.

Colonel Samuel Pomeroy Colt and party of guests left Providence June 4 for Camp Colt in the Maine woods to enjoy a three weeks' fishing trip. The camp is located on Kidney Point

at the base of Mount Katahdin, amid beautiful scenery, some thirty-five miles up the Penobscot river from Norcross. Trout and bass fishing is unexcelled.

John W. O'Bannon, head of the International Rubber Co., carriage cloth manufacturers, and of the O'Bannon Corporation, manufacturers of a leather substitute, who has been committed to a sanitarium since the middle of April, has been declared by a sheriff's jury to be incompetent to manage his own affairs and a committee is to be appointed. Mr. O'Bannon's career has been a remarkable one. Starting on a shoestring, he built up his business to corporations in which he has a $15,000,000 interest. Although declared mentally incurable by several alienists, he retains a wonderful mind and memory. He is still a young man of fifty and his friends in the rubber trade believe he will come back.

SALES MANAGER, SYRACUSE RUBBER CO.

FRANK G. MAUTHE, general sales manager of The Syracuse Rubber Co., Inc., Syracuse, New York, brings to that position an extensive and varied sales experience obtained with several prominent firms.

FRANK G. MAUTHE.

Born in North Clarendon, Pennsylvania, in 1883, he attended the grammar schools and from his boyhood until 1904 was engaged with his father in the mercantile business. Thereafter, for three years, he was store manager for the Vulcan Trading Co., then for two years department manager for the M. O'Neil Co., when, in 1910, he became an adjuster, office manager, and salesman for the Diamond Rubber Co. In 1912 he became identified with The Goodyear Tire & Rubber Co. as branch manager, which position he occupied until 1916, when he was appointed special factory representative of the Marathon Tire & Rubber Co., holding this office for three years. When the Syracuse Rubber Co. was organized in 1919 he accepted his present position as general sales manager.

Mr. Mauthe is a member of the Kiawanis Club, St. Albans No. 68 F. & A. M. and Branch Brook Chapter No. 47 Royal Arch Masons, both of Newark, New Jersey.

THE RUBBER TRADE IN THE EAST AND SOUTH.

By Our Regular Correspondent.

NEW YORK NOTES.

THE HUDSON Tire & Rubber Corporation has been incorporated under the laws of New York with a capital of $1,000,000. The offices are at Yonkers, New York, where a twenty-acre tract of land has been acquired and a modern factory will be erected for producing cord and fabric tires, tubes, solid truck tires, and other rubber goods. The officers of the company are: W. M. Doucette, president and general manager, and H. B. Seymour, vice-president and treasurer. Mr. Doucette has been in the tire business for a quarter of a century representing manufacturers in this country and abroad, and he was lately eastern district manager of The Mason Tire & Rubber Co. of Kent, Ohio. Mr. Seymour, who has been editor and business manager of "The Rubber Age and Tire News" and "Tire Trade Journal," entered the rubber business seventeen years ago with the Boston Woven Hose & Rubber Co. of Cambridge, Massachusetts, and later was with the Davidson Rubber Co. of Charlestown and the Plymouth Rubber Co. of Canton, Massachusetts.

Leslie & Knoke is the firm name of a new copartnership of crude rubber brokers, at 60 Stone street, New York. One of the partners is Charles S. Leslie, who started as an office boy 23 years ago with Reimers & Meyer and stayed through the successive changes in that house until it became Poel & Kelly. About a year ago he began business by himself. The other partner is Edward J. Knoke, who began twenty years since with Eggers & Heinlein, then went to Robinson & Co. and later to Constantino P. Dos Santos. When that firm was reorganized he went with Albert V. Tallman and three years ago became an independent broker.

The National Association of Corporation Schools, which includes some of the largest employers of labor in the United States, held a five-day convention at the Waldorf-Astoria, New York, the first week in June. The committee making a report on unskilled labor and Americanization included C. S. Coler, Westinghouse Electric & Manufacturing Co.; S. H. Renton, American Hard Rubber Co.; and B. N. Rohrer, The B. F. Goodrich Co.

The Rubber Corporation of America, recently organized, has its general offices at 240 West 55th street, New York City. The officers are: F. I. Reynolds, president, also vice-president and director of sales of the Empire Tire & Rubber Corporation, Trenton, New Jersey; Charles Austin Bates, vice-president, in charge of advertising, also vice-president of the Sterling Tire Corporation, Rutherford, New Jersey; W. A. Reynolds, J. Baker Taylor, Ralph V. Dickinson, and William D. Harris, vice-presidents in charge of sales; W. M. Pepper, chairman of the board, a member of the New York banking firm of Campbell, Heath & Co.; A. W. Fargo, secretary; directors—F. I. Reynolds, C. E. Murray, Sr. and Jr., C. A. Bates, J. A. Miller, W. T. Baird, W. M. Pepper, and Charles Austin Bates.

The company will maintain warehousing facilities in eight or ten of the principal cities in the United States where the goods of manufacturing companies will be warehoused and thence distributed. The selling organization will be much under the same direction and will perform for the manufacturing companies an economical selling and distribution service.

The Watson-Stillman Co., New York City, manufacturer of rubber machinery, packing, etc., has elected the following officers: E. A. Stillman, president, supervising sales; Carl Wigtel, vice-president and chief engineer; J. D. Brooks, treasurer; and A. Parker Nevin, secretary. LeRoy T. Brown has been appointed works manager, J. W. Delano, assistant works manager, and W. H. Martin, purchasing agent. The board of directors includes E. A. and A. F. Stillman, Carl Wigtel, A. Parker Nevin, W. L. Wright, George T. Ordway, and F. A. Hutson. G. D. Kershaw and J. F. Lary are no longer with the company and the positions of general manager and superintendent have been discontinued.

The Majestic Sales Corporation, 1834 Broadway, New York City, will distribute in the eastern and northeastern states the products of the Majestic Tire & Rubber Co., Indianapolis, Indiana, maker of Majestic cord tires and tubes. G. W. Chapman, formerly with The Fisk Rubber Co., is New York district manager, and S. J. Anderson, formerly with the Brunswick-Balke-Collender Co., is in charge of sales in the New York territory.

The Advance Rubber Co., Brooklyn, New York, is completing its new plant, 200 by 130 feet, and expects to occupy it about

July 1. Cord tires and tubes will be added to the present line of fabric tires and by-product horse-shoe pads. L. M. Kaplan is secretary of the company.

Thos. E. Wilson & Co., Chicago, manufacturer of sporting goods, has purchased the factory of the National Base Ball Manufacturing Co., Schenectady, New York, and will continue in charge John H. Grady as director of the baseball manufacturing division of the Wilson company.

At its annual meeting held recently, the General Electric Co., Schenectady, New York, reelected the former directors and officers.

Among the exhibitors in the permanent International Exposition of Industries, which the Merchants' and Manufacturers' Exchange of New York is operating at the Grand Central Palace, there are many whose exhibits will interest the rubber trade. We note: New York Rubber Co., Schaeffer & Budenburg Manufacturing Co., McNutt Can Sales Co., Portable Machinery Co., Spadone Machine Co., Brunswick-Balke-Collender Co., Converse Rubber Shoe Co., The Raybestos Co., Revere Rubber Co., Tagliabue Manufacturing Co., Westinghouse Electric & Manufacturing Co.

Mitsui & Co., Limited, Japanese importer, has appointed M. Kobayashi its New York representative, with headquarters at 65 Broadway, the New York City office.

CONNECTICUT NOTES.

The Seamless Rubber Co., New Haven, has entered into a sales arrangement with Adolph Perlroth, a real estate dealer, whereby the latter will take its old plant and cut it up into smaller divisions for selling purposes. The Seamless company expects to move into its new plant at an early date.

The Carlisle Tire Corporation, 250 West 54th street, New York City, and Andover, Massachusetts, has purchased all the assets of the Carlisle Cord Tire Co., Inc., and early in June had completed approximately 85 per cent of the new factory now building at Stamford, Connecticut. It expects to have the new plant in operation about the middle of July. Cord tires and truck tires will be manufactured exclusively. The concern is incorporated for $3,000,000 preferred stock and 300,000 shares of common without par value, under the laws of Delaware. J. S. McClurg is production manager.

PENNSYLVANIA NOTES.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, has elected the following directors for the ensuing three years: Guy E. Tripp, chairman of board; Joseph Marsh, H. H. Westinghouse, and Albert H. Wiggin. George W. Davison, president of the Central Union Trust Co., New York City, was selected by the board of directors to succeed James N. Wallace, deceased, and was elected by the stockholders for the term expiring June, 1921.

The Westinghouse Air Brake Co., Wilmerding, Pennsylvania, and not, as reported, the Westinghouse Electric & Manufacturing Co., has acquired ownership and control of the Westinghouse Union Battery Co., Swissvale, Pennsylvania.

The Vulcan Rubber Co., Erie, Pennsylvania, has just completed a two-story building, 76 by 123 feet, in which it is installing machinery for the manufacture of cord tires. It also plans to increase its production of fabric tires, for which it has purchased additional equipment.

The Allen Tire & Rubber Co., 510 Hamilton street, Allentown, Pennsylvania, has completed the organization of its $2,500,000 company and expects to start production of tires and tubes in September in the factory which is now under construction. The officers of the company are: Wilmer Dunbar, president; H. F. Clemmer, vice-president; T. S. Johnson, secretary; J. T. Leathers, treasurer. A. C. Leathers and Fred Leathers are sales agent and fiscal agent, respectively.

"The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has leased for the summer season a commodious cottage at Put-In-Bay, Ohio, for the purpose of providing vacation quarters for the young women in its offices. Twelve can be accommodated at once, and each girl will have a two weeks' vacation. A competent chaperone will be in charge.

Blakey & Hall, Pittsburgh, Pennsylvania, have been appointed distributers for the product of The India Tire & Rubber Co., Akron, Ohio.

The U. S. Compression Inner Tube Co., Inc., Tulsa, Oklahoma, has bought the property of the Kattanning Plate Glass Co., Kattanning, Pennsylvania, and will remodel the buildings at once for an eastern factory. A new structure will also be built in the spring. This factory will take care of the company's business east of the Mississippi river.

The Black & Decker Manufacturing Co., Towson Heights, Baltimore, Maryland, has moved its Philadelphia office, of which W. C. Allen is branch manager, to more spacious quarters at 318 North Broad street.

At the organization meeting of the Industrial Cost Accountants' Association at Chicago, on June 18, M. F. Simmons of the General Electric Co., Schenectady, New York, was elected president; C. H. Smith of the Westinghouse Air Brake Co., Wilmerding, Pennsylvania, was elected first vice-president and A. A. Alles, Jr., of the Fawcus Machine Co., and the Schaeffer Engineering and Equipment Co., Pittsburgh, Pennsylvania, was chosen secretary-treasurer. Headquarters of the Association will be in Pittsburgh, at the office of the secretary-treasurer, 1501 Peoples' Bank Building.

SOUTHERN NOTES.

C. F. Batton, who has been with the Atlanta and Birmingham branches of The Fisk Rubber Co. for the last four years, has been made manager of the new branch office recently opened at Jackson, Mississippi. Mr. Batton served nine months in the army during the war and was a second lieutenant in the Sixth Pioneer Infantry at Camp Sherman, Ohio, when discharged. The Jackson branch is the 128th to be established by the Fisk company in this country.

C. F. BATTON.

The McClaren Rubber Co., Charlotte, North Carolina, has appointed Charles G. Miller chief chemist. He was formerly assistant chemist of the Racine Rubber Co., Racine, Wisconsin.

The India Tire & Rubber Co., Akron, Ohio, has given the distribution rights for its products in Baltimore, Maryland, and the surrounding territory to Frank G. Schemuit.

The Kentucky Tire & Rubber Association, 502-503 Realty Building, Louisville, Kentucky, will begin excavation and construction on its new factory as soon as its railroad switch, now being laid, is completed. It expects to have the factory completed, also, in about four months.

R. H. Brown, formerly with the Kelly-Springfield Tire Co., in Akron and the Ideal Tire & Rubber Co., Cleveland, Ohio, has been engaged as superintendent of the new factory to be built by The Kentucky Tire & Rubber Association, Louisville, Kentucky.

The DuBois Rubber & Tube Co., 315-318 Volunteer State Life Building, Chattanooga, Tennessee, recently incorporated for the purpose of manufacturing a compression inner tube of the type that does not leak air when punctured, will also make the ordinary inner tubes and tire casings. It intends to increase its capital to $2,000,000 in the near future. The officers are: J. D. DuBois, president; L. H. Lightfoot, vice-president; P. B. Whit-

aker, secretary and treasurer; M. N. Whitaker and J. A. Stith, directors, in addition to the other officers.

The Hopewell Insulation & Manufacturing Co., Inc., Hopewell, Virginia, will begin about July 15 to manufacture hard rubber, condensation molded insulation parts, molded high tension insulators for all wireless and transmission purposes, etc. It uses the trade marks "Paramold," "Synthek," and "Himconite" on its hard rubber, high heat, and composition products, respectively.

With headquarters and general offices in Atlanta, Georgia, Couch Cotton Mills, Inc., has been formed by the consolidation of Couch Mills Co., Atlanta, Georgia, Beaver Duck Mills, Greenville, South Carolina, and Beaver Cotton Mills, Thomson, Georgia, with a capital and surplus of approximately $2,500,000. The officers are: Asa G. Candler, Sr., chairman board of directors; W. D. Couch, president; L. J. Powers, vice-president and secretary; and Walter T. Candler, treasurer. In addition to these, the board of directors includes A. P. Coles, Atlanta, Georgia, A. W. Townsend, New York City, and S. M. Graves, Charlotte, North Carolina. No change is contemplated in the management of the separate mills, which are in full operation day and night and manufacture a wide range of fabrics, including light-weight drills, beach cloths, filter twills, wide, sail, army and heavy belting ducks, etc., for both domestic and foreign use. Sales offices are maintained at 320 Broadway, New York City, in charge of A. H. Penfield.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

MISCELLANEOUS NEW JERSEY NOTES.

A DECREE signed by Chancellor Walker dismissing the bill of Clement Eckrode, of Highland Park, against the Endurance Tire & Rubber Co., of New Brunswick, on the ground that the Court of Chancery has no jurisdiction to interfere with the internal affairs of a New York corporation, has been filed with the county clerk of Middlesex county. Mr. Eckrode sought to set aside a conveyance by the company.

The Rubber Goods Manufacturing Co., New Brunswick, has filed a certificate of dissolution in the office of the Secretary of State. The company was incorporated in 1884 by Samuel Moore, Walter S. Bolton, Charles Clair, Lester Leland, Thomas E. Sawyer and James Deshler.

The Rubber Tire Co., of 32 Branford place, Newark, of which Russell T. Binder is president, will erect a three-story addition, 26 by 30 feet, to the present structure. The building will be of brick and will cost $16,000.

The Driver-Harris Company, Harrison, New Jersey, manufacturer of electrical wire, etc., has just completed a three-story building, 50 by 100 feet, which will later be increased to 50 by 200 feet. The contracts for the addition have already been let. The top floor will be used as a general office and the second for manufacture.

The Red Raven Rubber Co., 152-158 Sussex avenue, Newark, New Jersey, has bought the Ideal Wheel Tire Co. of the same city.

The Smith Rubber & Tire Co., Inc., 625 Main avenue, Passaic, New Jersey, expects to begin production about the middle of August. Machinery, molds and tire-building stands have been ordered, and the new factory is rapidly being completed. The officers of the company are: Winfield Clearwater, president; Fred W. Smith, vice-president; Dudley Gordon, secretary; and Thomas A. Hopkins, treasurer.

The Stanwood Rubber Co., Elizabeth, New Jersey, that absorbed the Hardman Rubber Corporation, of New Brunswick, New Jersey, has New York offices at 6 East 30th street. It supplies unvulcanized gums—tread, camel back tread, cushion, tube repair and cured-back tube gums; fabrics—building, bead, breaker and cord fabrics; and cements—vulcanizing, patching and quick-curing vulcanizing cements and acid-curing solution.

K. H. Dresser was promoted early in 1920 to the position of branch manager of The Goodyear Tire & Rubber Co. at Newark, New Jersey. Mr. Dresser's first connection with The Goodyear Tire & Rubber Co. was in 1912, as assistant manager of the mechanical goods department at Akron, Ohio. A year later he was sent to Portland, Maine, as branch manager, remaining until April 1, 1915, when he was transferred to a similar position at Springfield, Massachusetts. In the summer of 1917 he was recalled to Akron to act as staff man on motorcycle tires, and was soon placed in charge of the cycle tire department. On January 1, 1918, he was sent to the New York and New England districts in connection with the company's second sale of preferred stock, in which he was exceptionally successful. He was then attached to the manufacturers' sales department, with headquarters in New York City, and continued this work until transferred to his present position.

TRENTON NOTES.

The Bergougnan Rubber Co., Trenton, has begun the erection of three additions to its plant, and will eventually double the size of the works. One of the buildings is two stories high and measures 60 by 120 feet. Another is a machine shop, two stories, 40 by 170 feet. A good-sized storage building is about to be completed. The company will expend between $50,000 and $60,000 for new machinery. The buildings will be of brick and steel with concrete floors. The new operations will cost $100,000. The largest addition will be used for the manufacture of tires.

The Thermoid Rubber Co., Trenton, will purchase about $100,000 worth of machinery to be used in the new addition now being erected. The company will not yet disclose the nature of the machinery, which is being purchased through the builders, Karno-Smith Co., of Trenton.

The Empire Tire & Rubber Corporation has made complaint to the City of Trenton in an effort to have portions of the Assanpink Creek filled in. The company has suffered considerably through water backing up in the creek and flooding the lower floors of the plant.

The Essex Rubber Co. Mutual Benefit Association, Trenton, has elected the following officers: James Kelly, president; C. L. Stokes, vice-president; Walter Gratton, secretary, and E. R. Rogers, treasurer; Miss Catherine Franks, J. V. Hall and J. Oscar Reynolds, members of the executive committee.

The employes of the Essex Rubber Co. recently held an entertainment and dance at the Crescent Temple, Trenton. W. G. Sanders, J. C. Cartlidge and L. M. Oakley comprised the committee in charge.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

EXPANSIONS AND IMPROVEMENTS at the plant of the Revere Rubber Co., on Eagle and Valley streets, Providence, continue, several projects being under way at the present time. Among these is the erection of a garage building with all modern appointments and equipment with a capacity to start for 25 cars. The building is so planned that additions can be made as necessity demands.

Work has been started on two large additions to the plant of the Jenckes Spinning Co., Pawtucket, that have been made necessary by the increasing demands upon the company for textiles used in tire production. One of the new structures is to be a four-story manufacturing building of brick, mill construction, 128 feet long and 100 feet in width, to cost about $100,000. The other is a two and one-half story addition on top of the present storehouse, which is about 100 feet long and 70 feet wide, of brick fireproof construction.

The corporation return of the Jenckes Spinning Co. has been filed at the office of the city clerk of Pawtucket. It sets forth

that April 26, 1920, an addition of common stock of $1,800,000 was issued, making 10,000 shares of preferred stock, par value $100 each share, total $1,000,000, now outstanding; and 36,000 shares of common stock of par value of $100 each, total par value $3,600,000 now outstanding, and that of said stock had been paid in. The certificate is signed by LeRoy Fales, president; F. L. Jenckes, treasurer; J. W. Baker, secretary; also by LeRoy Fales, Albert A. Jenckes and F. L. Jenckes, a majority of the board of directors.

The Elastic Webbing Co., Pawtucket, Rhode Island, has completed plans for the erection of its proposed new plant at Dixfield, Maine, to consist of a four-story mill, 100 by 150 feet, to cost about $100,000. The structure will be located on a site near the Webb river.

The American Wringer Co. is to erect a three-story brick manufacturing building near its plant on Clinton street, Woonsocket, Rhode Island, the plans for which are all ready. It is to be 90 by 42 feet, of the slow-burning type of construction, and is to cost about $20,000.

Philias J. Savoie and Frank R. Larson are the proprietors of the Savoie Rubber Manufacturing Co., 17 Blackstone street, Woonsocket, Rhode Island, according to their statement filed at the city clerk's office in that city.

The National India Rubber Co., Bristol, has decided to operate a branch factory of the shoe division in Newport, Rhode Island, where a site has been selected and a building is to be erected at once. The branch factory will include the stitching department and about 200 young women will be employed at the start, and this number will be increased as the work progresses. It is planned to have the new branch ready for operation by September.

Leon F. Ballou has resigned his position with the shipping department of the Alice Mill, Woonsocket Rubber Co., having been appointed traffic manager for the Alice and Millville plants of the Woonsocket company. On the day that he left his old position, on behalf of his former associates John Riley, who succeeded him as foreman of the shipping department, presented him $25 in gold.

A factory paper is to be organized at the plant of the National India Rubber Co., Bristol, in the near future, all plans and arrangements having already been made. An editor has been appointed and an office is being fitted up for his use. A contest for the name by which the paper shall be known is under way, and a prize will be given for the winner, a ballot to be taken on the best eight names proposed.

The additions and improvements that are being made at the plant of the Mount Hope Spinning Company, at Warren, Rhode Island, are being pushed toward completion as rapidly as possible. The new addition to the main section, 100 by 200 feet, is practically finished; the sprinkler system is already installed throughout and the electric power is ready for use; the piping has been completed and the plumbing is nearly done. The 40 by 70 addition to the old plant is also nearly completed.

George W. Romprey, a repairman of Woonsocket, Rhode Island, has been adjudged a bankrupt upon an involuntary petition filed by three creditors who were: The Goodby-Rankin Co. of Rhode Island, with a claim for $2,576.35; The Fisk Rubber Co. of New York, $2,096.31 and The B. E. Goodrich Rubber Co., of Ohio, for $2,352.42. Elisha C. Mowry has been appointed receiver.

A new 100,000-gallon steel water tank is being erected by the O'Bannon Corporation at its rubber plant at Bay Spring in West Barrington, Rhode Island, for protection against fire.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" AND "RUBBER MACHINERY," by Henry C. Pearson, should be in the library of every progressive rubber man.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

BOSTON NOTES.

ONE of the latest problems added to the already long list of rising costs is that of motoring in general and of tires in particular. If the life of a set of automobile tires can be prolonged 25 per cent, the saving is four times the increased cost of gasoline for a season. With this in mind, and to help combat the high cost of motoring, The B. F. Goodrich Co. recently inaugurated a "Save-Your-Tires" week in Boston, as it has done in other cities. As an important part of the program many local motion picture houses exhibited during that week the Goodrich film entitled "Striking Tires." It is of the humorous cartoon type and drives home in an entertaining manner the most serious features of tire neglect and points out the things a motorist should avoid in order to extend the life of his tire equipment.

The Pennsylvania Rubber Co. has appointed L. J. Waldron as its New England manager. Mr. Waldron has been selling Pennsylvania tires for five years, previous to which he was connected with The B. F. Goodrich Co. for a like period.

The Gillette Rubber Co. agency, the Gillette Tire Co., at 587 Boylston street, Boston, has been taken over as a factory branch with Frank C. Stetson as district manager. Mr. Stetson was formerly with the Lee Tire & Rubber Corporation. He has been selling tires in New England for eighteen years, and is one of the oldest tire salesmen in the country in point of service.

The Lambert Tire & Rubber Co., Akron, Ohio, has opened a store for the New England distribution of the Lambert "Trublpruf" cord tire at 823 Boylston street, Boston. The officers of the Boston concern are A. J. Millward, James J. O'Brien and L. H. Plummer. The Lambert tire is built with stretchless cord belts placed between layers of rubber with air holes placed around the tire in such a way as to give it the resilience of a pneumatic. It contains no inner tube and requires no inflation.

The old Park Riding School, in the center of the tire district at Ipswich and Lansdown streets, where the élite of Boston learned to ride horseback, has been remodeled and equipped as a storage warehouse for tires by The B. F. Goodrich Rubber Co. The premises consist of three buildings, affording a total of 73,000 square feet. Here the company will garage its cars and maintain a large distributing center. F. D. Keen, formerly assistant operating manager, has been placed in charge.

The India Tire & Rubber Co., Akron, Ohio, has appointed W. W. Alexander as its factory representative in New England, with headquarters in Boston. Mr. Alexander is well acquainted with the New England trade through long association with the Diamond Rubber Co. in the early days of the industry. He comes to the India Tire & Rubber Co. from the Dayton Tire Co.

The Converse Rubber Shoe Co., Malden, has opened a Boston salesroom at 801 Boylston street for the sale of Converse cord tires. F. R. Goodell, formerly in charge of New York footwear sales for the company, is manager.

The Joseph E. Greene Co., 113 Federal street, Boston, has been appointed New England distributer for Empire tires and tubes.

R. R. Cowen, of the sales force of the E. H. Clapp Rubber Co., Boston, was married on June 19 to Miss Mabel S. Thompson, an alumna of Smith College, class of '18. Mr. Cowen is a graduate of Harvard College, class of '16. He enlisted in the Army during the late war and was assigned to Camp Zachary Taylor, where he earned a commission as a lieutenant of artillery.

Boston's Ancient and Honorable Artillery Company observed its 282nd anniversary on June 7, 1920, and at the annual drumhead election chose Captain Francis H. Appleton, Jr., adjutant. He is following close in the steps of his father, who, as Commander of the organization, led the peaceful "invasion" of England. In the war the son was Captain of the 67th Company of the State Guard.

MISCELLANEOUS MASSACHUSETTS NOTES.

The tire division of the Converse Rubber Shoe Co., Malden, Mass., is now in charge of Dr. Ernest A. Wullenweber, an expert of twenty-two years' experience in the chemical laboratories of leading rubber companies. For ten years he was in the Morgan & Wright factory of the United States Rubber Co. at Detroit, Michigan, and he came to the Converse forces from the Mid-Continent Tire Manufacturing Co., of Wichita, Kansas. Under his direction the Dainty Maid shoe factory is being converted into an enlarged tire plant, and henceforth Converse tires will take a more prominent place in the trade.

All factory operatives of the Converse Rubber Shoe Co., Malden, are now protected by three forms of insurance. Life and accident insurance have been in effect for some time, but effective June 1 a disability insurance was added. Under this policy every employe will receive 60 per cent of the regular weekly earnings whenever more than seven days are lost through sickness of any kind, or accident or injury sustained outside of the factory.

The George Grow Tire Co. has found day and night production necessary to meet the demand for Grow tires, and the factory at Canton Junction, Massachusetts, is soon to be enlarged.

The Monatiquot Rubber Works Co., of South Braintree, Massachusetts, has let a contract for the construction of a second siding on the Plymouth Division of the New York, New Haven & Hartford Railroad. This will open up for manufacturing purposes a very desirable allotment of land on which it is probable that an independent reclaiming unit will be built and the company's plans for housing employes, which were held up by the war, may be carried through to completion. It will also enable the company to store coal for a year's consumption.

Dining with music is an excellent feature of the big new employes' restaurant on the roof of the Hood Rubber Co. office building at Watertown, Massachusetts. The force boasts a wealth of musical talent and volunteers are providing daily instrumental and vocal concerts during the noon hour that send the Hood operatives back to their work singing. This attractive cafeteria is serving seven hundred luncheons daily and small branch lunch counters have been established in different parts of the factory to take care of those who do not go to the main restaurant.

The New England Tire & Rubber Co., 285 High street, Holyoke, Massachusetts, is to build a factory on a site recently acquired from the Holyoke Water Power Co., for the manufacture of the "Holyoke" cord tire and the "Connecticut Valley" inner tube. Plans for its construction are now being completed and it is expected that building operations will begin at an early date. The factory will be planned to produce 1,000 tires daily, and the latest machinery will be installed. The officers of the company are: George K. Culp, president, sales manager and director, formerly with the United States Rubber Co., the G. & J. Tire Co., and The Mid-Continent Tire Manufacturing Co.; E. J. Kearns, vice-president and production manager, formerly with The Fisk Rubber Co. and the Lee Rubber Co., also associated with the Dunlop Pneumatic Tyre Co. of Australasia, Limited; C. S. Huntley, treasurer, general manager, and director, formerly with the Delion Tire & Rubber Co. and the Midco Tire Co., Inc.; and S. R. Huntley, secretary and director. The other directors include: George P. O'Connell, T. E. Morris, W. C. Van Brunt, F. W. Callahan, John Kearns, J. Sidney Bernstein, and Joseph F. Ranger. The company is incorporated under the laws of Delaware with a capitalization of $1,500,000 of eight per cent preferred stock and $1,500,000 of common stock with par value of $10. Executive offices are maintained at 43 East 47th street, New York City.

The Crompton & Knowles Loom Works, Worcester, Massachusetts, has increased its capital stock from $6,000,000 to $8,000,000. John F. Tinsley, vice-president and general manager of the company, has been appointed a representative of employers on the committee named by the Massachusetts Department of Labor and Industries to frame a safety code in the wood-working machinery industry.

The new Industrial Banking System introduced by the Boston Woven Hose & Rubber Co., Cambridge, has had a wonderful success. The plan was instituted in cooperation with the Manufacturers' National Bank of Cambridge to enable the employes to have all the conveniences of a savings bank without having to take the time to go to the bank to open an account or make a deposit. All banking except the withdrawal of money is handled in the plant. One dollar opens an account and encourages the small earner to start saving. When the money is collected a sum corresponding to the amount of money deposited is placed in the employes' bank book, and a duplicate stamp of the same number goes with the money to the bank. Stamps have no negotiable value, serving simply as a memorandum of deposit. Although only in operation a short period, nearly 300 accounts have been opened and the average amount deposited weekly at the present time is in the vicinity of $500. It is safe to assume that a large percentage of this amount would not otherwise have been laid aside.

A WELL-KNOWN TIRE MACHINERY INVENTOR.

THOMAS MIDGLEY, consulting engineer and inventor, now in charge of the development work of The Fisk Rubber Co., Chicopee Falls, Massachusetts, has for many years been well known for his activities in devising new and better machines for the manufacture of tires.

THOMAS MIDGLEY.

Born in London, England, in 1860, Mr. Midgley soon came to America, and was educated in the public and evening schools of Worcester, Massachusetts. In 1874 he secured employment in a shoe factory, and four years later became a time-keeper and foreman in a wire mill in Worcester. This experience led in 1884 to his appointment as superintendent of the Hartman Steel Co., Beaver Falls, Pennsylvania. Four years later he started in business on his own account manufacturing wire goods and torpedo nets.

In 1896 he accepted the position of superintendent of the Columbus Bicycle Co., Columbus, Ohio, and four years later again went into business for himself manufacturing steel wheels and automobile tire rims.

His first direct connection with the rubber industry was in 1905, when he became consulting engineer for the Hartford Rubber Works, Hartford, Connecticut, and allied companies, notably Morgan & Wright. In 1914 he was manager and one of the incorporators of the Midgley Tire & Rubber Co., a West Virginia corporation, and the following year of the Midgley Tires Co., an Ohio corporation. After developing a tire-building core for the Interlock Core Co., Columbus, Ohio, in 1917, he went to his present work at the Fisk plant.

Mr. Midgley is perhaps best known as the inventor of the Midgley collapsible core, though he has taken out numerous patents for miscellaneous tire machinery, some of the later ones being devices for wrapping bead wire and for trimming beads and tire flaps.

He is a member of the Society of Automotive Engineers and the Benevolent Protective Order of Elks.

FIRESTONE'S WESTERN SALES MANAGER.

FRANK K. STARBIRD, western sales manager of the Firestone Tire & Rubber Co., Akron, Ohio, is one of Ohio's enterprising native sons. Born in New London, Ohio, in 1885, he was educated in the local grade and high schools and later in Ohio State University, at Columbus. He entered the employ of the Firestone company in April, 1916, beginning in the advertising department where he was soon made manager of the dealers' advertising department. Later, his activities being transferred to sales, he became manager of the pneumatic sales department, then manager of the Northwestern district, embracing the Minneapolis, Great Falls, Minot, Fargo and Des Moines branches, with headquarters in Minneapolis. At the beginning of the present year he was promoted to western sales manager, with headquarters in Akron.

FRANK K. STARBIRD.

THE RUBBER TRADE IN OHIO.

By Our Regular Correspondent.

AKRON NOTES.

WORKING against transportation difficulties and the beginning of refinancing following the war period, were the dominant features of the rubber industry in Akron during the past month. The production of tires and rubber goods has been greatly retarded by the railroad situation and possibly by the credits extended by bankers to the industries. Although no definite announcements have been made, it is understood by bankers in the city that a large number of men have been laid off indefinitely and plans are under consideration for further curtailment unless the situation clears up in the very near future.

For some time after the railroad situation became serious the rubber factories employed truck trains to bring in fabric, which was scarce in the city, and in several instances armed trains were employed to bring fabric from the East. But after raw materials were supplied it became impossible to ship out manufactured goods. As a result it is generally understood, although no official statement has been forthcoming, that large amounts of manufactured goods are stored in warehouses and old buildings awaiting an opportunity to ship.

However, the effect of the temporary depression upon the city is not regarded as serious by the manufacturers or Akron bankers. In an interview given by D. R. Held, cashier of one of the largest banks and dean of Akron bankers, he expressed the opinion that this situation is exactly the thing needed to bring business back to its normal basis. "All our industries had gone mad about business and they were attempting to do more than they were able to handle, and if the switchmen's strike had not occurred it is not unlikely that business would have received a severe blow by the continued inflation. As it is, the business men were warned in time to curtail and the depression will come and go without leaving any failures in its wake," he said to the correspondent of THE INDIA RUBBER WORLD.

The freight situation in Akron proper has been entirely cleared up and the resumption of normal shipping of goods depends entirely upon the increase in efficiency of the transportation system outside of the city itself.

The following promotions in the executive force of The B. F. Goodrich Rubber Co., Akron, were recently announced: V. I. Montenyohl and L. L. Smith, credit managers, have been made assistant treasurers, and W. C. Arthur, assistant secretary and counsel.

V. I. Montenyohl has been connected with the Goodrich company for thirteen years, having started in 1907 as a stenographer in the treasurer's department. He began his credit work in 1910 and after several years handled the more important duties of the credit department. He was appointed credit manager in the spring of 1917.

L. L. Smith, who has completed twelve years of service, became connected with the Goodrich company in 1908 as receiving clerk in the tire adjusting department, and later was advanced to tire adjuster and then to assistant manager of the Kansas City branch. In 1914 he was made special salesman in the Kansas City territory. He was transferred to the Akron credit department in 1915 and after two years in that department was made credit manager.

L. L. SMITH. V. I. MONTENYOHL. W. C. ARTHUR.

W. C. Arthur became associated with the Goodrich company in 1917 when the legal department was organized. He is a graduate of the University of Pittsburgh, class of 1907 and took his law degree in 1913.

The B. F. Goodrich Co., Akron, announces the following changes in personnel: F. W. Jones, formerly in charge of footwear sales, has been assigned to special sales work; W. E. Hawkins will succeed Mr. Jones as manager of footwear sales, and F. C. Garrett will succeed Mr. Hawkins as operating manager, assisted by A. W. Thompson, formerly chief clerk at the Akron branch. H. A. Staley will combine the duties of chief clerk and adjuster at the Akron branch.

Athletes of The B. F. Goodrich Co., for the fourth time in succession, won the Akron Industrial League track meet championship Memorial Day, the results being: Goodrich, 59 points; Goodyear, 58; Firestone, 56, and Miller, 16.

Rex Lake, one of the largest industrial playgrounds in the world, which is operated for the employes of The B. F. Goodrich Co., has been opened for the season. The sports at the grounds include baseball, tennis, cricket and soccer, as well as boating and canoeing. Boats and fishing tackle are provided for those who wish to fish. Special playgrounds for children have been provided and a large roomy cottage equipped with kitchens, dining and rest rooms has been remodeled for the season.

Honoring Mr. and Mrs. John R. Gammeter, who left June 23 for a tour of Europe, employes in Mr. Gammeter's department at The B. F. Goodrich Co. gave a banquet at Young's Hotel, June 3, presenting Mr. and Mrs. Gammeter with a leather-bound book containing the autographs of those present. About 156 participated in the event.

The Firestone Tire & Rubber Co. plant was recently closed down for thirty minutes to enable the men to hear in three mass meetings the story of the "Inter-Church World Movement," staged by Protestant churches to obtain more than

$350,000,000 for improvement of church work. H. S. Firestone, president, was one of the speakers at the meetings.

A branch of the Akron public library will be opened at the Firestone Club House at an early date. Carpenters have been at work preparing a special room to accommodate it.

The controlling interest in the Biltwell Tire & Rubber Co., Akron, has been purchased by The Wildman Rubber Co., 816 Book Building, Detroit, Michigan. The following officers have been elected, the former ones having resigned: W. W. Wildman, president and general manager; M. Braley, vice-president, and C. R. Twynham, secretary-treasurer. In addition to the above, the directors include L. C. MacGregor, Detroit, Michigan; George W. Sieber, J. C. Clinefelter and E. H. Trump, Akron, and B. O. Etling and A. F. Stuehldrehr, Barberton, Ohio. The Biltwell factory has a daily capacity of 500 pneumatic tires and 1,000 inner tubes, which will presently be doubled by an addition to the plant. The Biltwell will henceforth be financed by The Wildman Rubber Co.

The Akron Rubber Mold & Machine Co., Akron, has broken ground for an extensive addition to its plant which will more than double its present capacity for the manufacture of tire building and tire repair equipment. The present plant covers more than 75,000 square feet of floor space. Particular demand is being made for equipment for producing cord and giant pneumatic truck tires, and the company's foreign trade is now greater than ever before in its history. New machinery ordered for the extension is being temporarily installed in the present quarters in order to increase production without waiting for the completion of the addition.

C. W. McLaughlin, vice-president and treasurer of the Mohawk Rubber Co., was one of the principal speakers at the annual convention of Federal Reserve bankers at Cleveland the latter part of May.

John R. Gammeter, of The B. F. Goodrich Co.; W. E. Wright, donor of a flying field; B. A. Polsky, president of the Akron Chamber of Commerce; Mayor Carl F. Beck, C. W. Seiberling, R. K. Crawford, I. S. Myers, George Kile, Ralph H. Upson and S. W. Worley were named an honorary board of governors of the Akron Flying Club at a meeting held recently. The meeting followed a field day in which a large number of planes were demonstrated and passengers carried. Approximately 8,000 persons witnessed the flights.

The Goodyear Tire & Rubber Co., Akron, announces the following promotions in its sales organization. L. C. Gates has been made manager and H. E. Waldsmith has been selected as branch manager at Akron.

L. C. GATES.

L. C. Gates entered the employ of the company in a clerical capacity in the assistant division of the automobile tire department in 1915, and was soon transferred to city sales work in the Philadelphia, Pennsylvania, branch. His next step forward was as assistant manager at Philadelphia, followed in 1919 by assignment as manager of the Dayton, Ohio, branch. Owing to his organization ability his promotion to the management of the motorcycle tire sales division of the automobile tire department at Akron followed early in 1920.

H. E. Waldsmith's first connection with the Goodyear company began in 1915 as a special traveling representative in the bicycle and motorcycle tire department. After a year he was assigned to sell Goodyear motorcycle tires. In 1918, he was transferred to the automobile tire department, and in about a year was promoted to special representative, calling on dealers and motorcycle manufacturers. On July 1, 1919, he was appointed branch manager at Youngstown, Ohio, where his splendid record brought further recognition early in 1920 by his appointment as branch manager at Akron.

The Goodyear Tire & Rubber Co. has announced that the Wingfoot aviation station recently purchased from the Government, will be thrown open to the general public in the very near future and the dirigible purchased from France will be on the ground for exhibition and test purposes. A large number of improvements are being made in the field.

The Goodyear engineering department will soon move into a new five-story building which is now being completed.

P. W. Litchfield, factory manager of the Goodyear Tire & Rubber Co., was the principal speaker at the simple unveiling of a tablet dedicated June 2 to the one hundred and five Goodyear men who gave their lives in the world war.

The stores established by the various rubber companies in order to reduce the cost of living to their employes have proved a success. The Goodyear Tire & Rubber Co. store, opened recently, did $4,000 of business the first day and thereafter the average sales a day have been $8,000.

Thirty motorcycle riders formed the initial membership of a motorcycle club organized in Akron. Their first meeting was held at the Firestone clubhouse. A gypsy tour for the latter part of June was the first event arranged by the new club. William W. Twite is president of the new organization.

CLEVELAND NOTES.

The Erie Tire & Rubber Co., Cleveland, Ohio, at meetings of stockholders held May 11 and May 26 voted to increase the capitalization of the company from $4,000,000 to $10,000,000, due to the remarkable growth of the company during its first year. The following directors were elected, two new ones being added: P. F. Wills, H. H. Forrest, M. C. Phillips, F. W. Hildebrand, A. M. Mander, C. V. Goepper and E. L. Braeunig.

The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio, has appointed G. E. Bovis manager of the Cleveland branch, succeeding E. F. Thompson, who recently went to the Pacific Coast. Mr. Bovis was formerly manager of the McGraw branch in Des Moines, Iowa, previous to which connection he was with The Fisk Rubber Co. at Sioux Falls, South Dakota.

The General Rubber Goods Co., Cleveland, Ohio, has increased its capital from $50,000 to $100,000. Griswold Wilson is president and Lindsay H. Wallace secretary and treasurer.

The Thor Tire and Rubber Co., 802 Society for Savings Building, Cleveland, with factory at Willoughby, Ohio, was incorporated under the laws of Ohio on December 1, 1919, with a capitalization of $1,000,000 consisting of $500,000 each of preferred and common stock. The first unit of the factory, which is 200 by 40 feet, has been practically completed, and mechanical rubber goods will be manufactured there at an early date. The main building will be 400 by 90 feet, with a capacity of 3,000 tires and 500 tubes. The property covers 44 acres, adjoining the New York Central railroad. M. W. Gary is secretary.

The partnership of Fanner & Brown, engineers, has been reorganized under the name of The Associated Engineers' Company, with offices at 130 Engineers' Building, Cleveland, Ohio.

The 1920 Credit Convention of the Motor and Accessory Manufacturers' Association, has been tentatively scheduled for Thursday and Friday, September 16-17, at Cleveland, Ohio. In view of the vital problems affecting the automobile industry, in relation to the general financial and credit conditions, it is believed that this year's credit convention will be one of the most interesting and important in the history of the association. Further details concerning the meeting will be announced later.

The National Sales & Trading Co. has removed from the Swetland Building to the entire sixth floor of the Racine Build-

ing, 11th and Chestnut streets, Cleveland, Ohio, in order to take care of increasing business in chemicals for the rubber trade.

JOHN MORGAN, PRESIDENT OF THE McGRAW TIRE & RUBBER CO.

At a special meeting of the board of directors of the McGraw Tire & Rubber Co., East Palestine, Ohio, on June 5, John Morgan, formerly vice-president and treasurer, was unanimously elected to the presidency, succeeding the late Edwin C. McGraw, founder of the company, who died at his southern home, Miami, Florida, on May 24, 1920.

JOHN MORGAN.

Mr. Morgan will also continue to serve as treasurer. He has been associated with the company almost since its inception ten years ago and has taken an active part in shaping its policies.

Mr. Morgan was born in London, England, in 1880, and in 1905 came to America to introduce the Kempshall tire into the United States. He is a director of the Rubber Association of America.

MISCELLANEOUS OHIO NOTES.

C. D. Rockwood, purchasing agent of The Mason Tire & Rubber Co., Kent, Ohio, has returned from the Far East. In connection with J. P. Mathews, the resident manager of the Mason Rubber Plantations Co. at Singapore, he has been undertaking negotiations for acquiring additional rubber plantations for the company.

Four men were killed and approximately fifty injured when a benzol tank exploded June 7 as the result of a fire in the spreader room of The Mason Tire & Rubber Co. plant at Kent, Ohio.

The Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio, has changed its corporate name to "The Vaughn Machinery Co." C. W. Vaughn is still president and L. A. Vaughn secretary and general manager, and there will be no change in management, while the complete line of Vaughn machinery will be manufactured as heretofore.

The Giant Tire & Rubber Co., Findlay, Ohio; The I. J. Cooper Rubber Co., Indianapolis, Indiana, and Cincinnati, Ohio, and The Cooper Storage Battery Mfg. Co., have consolidated under the name, "The Cooper Corporation," with headquarters at Eighth and Main streets, Cincinnati, Ohio.

The Republic Rubber Corporation, Youngstown, Ohio, has elected the following officers and directors: William Wilms, chairman of the board; E. F. Jones, president; C. H. Booth, L. T. Petersen, H. J. Woodard and C. F. Garrison, vice-presidents; H. J. Stambaugh, treasurer; Arthur L. Irish, secretary. Directors—C. H. Booth, H. M. and Richard Garlick, Robert Bentley, R. E. Cornelius, John T. Harrington, E. F. Jones, R. C. Steese, John Tod, T. E. Borton and William Wilms.

The Rubber Products Co., Barberton, Ohio, has elected the following officers: W. A. Johnston, president; C. C. Schutz, vice-president and general manager; J. W. Blaser, treasurer; E. J. Schutz, assistant treasurer; J. M. Wylie, secretary; J. B. Chisnell, assistant secretary.

The Marion Tire & Rubber Co., Marion, Ohio, has elected the following officers: L. B. Walters, president; W. E. Cameron, vice-president; Sam F. Zilliox, treasurer; C. W. McLaughlin, secretary; W. P. Haynes, assistant secretary and assistant treasurer. Directors—Allan F. Ayers, R. C. Ellsworth, S. F. Zilliox, C. W. McLaughlin, L. B. Walters, R. D. Belden, W. E. Cameron, W. H. Holverstott, J. W. Jacoby and W. A. Patterson.

The Rotary Tire and Rubber Co., Zanesville, Ohio, has appointed as its sales manager, with headquarters at Zanesville, R. B. Ford, formerly special representative and branch manager of The B. F. Goodrich Co. at Utica and Syracuse, New York, and at Columbus, Ohio.

The Knox Tire & Rubber Co., Mt. Vernon, Ohio, is building a new factory for the manufacture of cord and fabric tires and red and gray tubes. The latest machinery, including equipment for making goods in millimeter sizes to take care of foreign business, will be installed. The building will be three stories high, 100 by 225 feet, of concrete, brick, and steel construction. F. D. Spencer is secretary-treasurer.

The McWade Tire & Rubber Co., Garrettsville, Ohio, has purchased a factory site on which it will build a plant to manufacture a full line of cord and fabric tires and mechanical goods, including a pneumatic inner tube that will not become deflated when punctured. The officers are: J. H. McWade, president; C. C. Cox, vice-president and general manager; H. G. Vincent, secretary and treasurer.

THE RUBBER TRADE IN THE MID-WEST.

MID-WEST RUBBER MANUFACTURERS' ASSOCIATION.

THE RECENT BULLETINS of the Mid-West Rubber Manufacturers' Association have contained much material of interest to members; the weekly review of the crude rubber market and the special topics have been of timely interest. Some of these are: a report on employment in the automobile industry, in April, 1920; a plea for reduction of prices leading to an increase of business; a quotation from the bulletin of the First National Bank of Philadelphia, in which William A. Law, president of that institution, points out the difficulties of efficient banking to-day due to the shortcomings of the postal system; and the decision of the Council of National Defense not to urge early buying and storing of coal, because of the existent difficulties of transportation.

The next meeting of the Association will be held on July 13 in the Chicago Athletic Association Building, 12 South Michigan avenue, Chicago, Illinois.

The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, and New York City, has removed its Chicago office from the People's Gas Building to its own building at 323 North Michigan avenue. H. L. Dawson is manager of the Chicago office, which handles the business of nineteen states with sub-offices in Cincinnati and Detroit.

The Empire Zinc Co.'s new plant at Cañon City, Colorado, work on which was begun only four months ago, is already roasting ore. The concern is a subsidiary of the New Jersey Zinc Co. The Cañon City plant is modeled on the zinc oxide plants of the company at Palmerton, Pennsylvania, and care will be taken to keep the quality of the products uniform. The other portions of the plant are nearly ready, the chief ground for uncertainty being the railroad situation. It is believed that zinc oxide will be produced at the plant much sooner than was expected.

The Latex Tire & Rubber Co., Fond du Lac, Wisconsin, has completed its new plant and office building, including the main factory building, 50 by 150 feet, two stories high, and the power plant, 50 by 40 feet. The factory is located on East Scott street and is equipped with up-to-date machinery. It is planned on the unit system and other units will be added as the business develops. F. S. Danenberg is president of the company.

PLANT OF LATEX TIRE & RUBBER CO.

The Majestic Tire & Rubber Co., Indianapolis, Indiana, has elected the following officers: R. H. Syfers, president; E. B. Oscars, vice-president; and George O. Wildhack, secretary-treasurer.

The Miller Rubber Co., Akron, Ohio, has opened a branch at 3 East Water street, Milwaukee, Wisconsin, where 30,000 feet of floor space have been leased and a preliminary shipment of twelve carloads of tires made.

The Parker Tire & Rubber Co., Indianapolis, Indiana, has increased its capital from $750,000 to $3,000,000, and is drawing up plans for the erection of a new factory building 600 feet long, 100 feet wide, and two stories high. When completed and equipped, it is estimated that the company will have a capacity of 2,000 tires daily. The company emphasizes white in every possible way in connection with its business, its letterhead even having the name embossed with a die instead of the usual printing.

The Rubber Sales Co., 53 West Jackson Boulevard, Chicago, Illinois, has been recently organized for the purpose of marketing various rubber products pertaining to the automobile industry in Chicago and the Middle West. F. E. Kaeppel, formerly with the Federal Rubber Co. and the Mechanical Rubber Co., is president. The company acts as direct mill agents.

The Tong-em-on Vulcanizer Co., Minneapolis, Minnesota, has changed its name to Risk's Riskless Vulcanizer Co., as also the name of its product, which was described in THE INDIA RUBBER WORLD April 1, 1920, under the old name.

The Wildman Rubber Co., 816 Book Building, Detroit, Michigan, has purchased the controlling interest in the Biltwell Tire & Rubber Co., Akron, Ohio, as noted elsewhere in this issue. The Wildman company will operate the Biltwell plant in addition to the one it is to erect at Bay City, Michigan.

The Morgan & Wright plant, Detroit, Michigan, is being enlarged by the addition of a two-story building, 90 by 275 feet, and a power plant.

SALES MANAGER, SAVAGE TIRE SALES CO.

JOHN ELDEN SHAW, sales manager of the Savage Tire Sales Co., Des Moines, Iowa, was born in Saylesville, Rhode Island, September 21, 1886. After completing his education in a business college he became a newspaper reporter, which is a valuable training preparatory to any sort of business career.

JOHN E. SHAW.

His first experience with the rubber industry commenced some ten years ago with the L. A. Vulcanizing Co., of Los Angeles, California. Early in 1914 he started with the Savage Tire Co., of San Diego, California, as credit man in the Los Angeles branch, later being transferred to the factory as credit manager, then promoted to traveling auditor and soon to special salesman. In February, 1918, he was appointed assistant sales manager, and eleven months later was advanced to sales manager. In this position he greatly increased sales and changed the company's policy from a consignment to a straight sales basis, and on February 1, 1920, resigned to go into business for himself.

Mr. Shaw has a wide acquaintance in social and fraternal as well as business circles and is a member of the B. P. O. Elks No. 168 of San Diego.

THE RUBBER TRADE ON THE PACIFIC COAST.

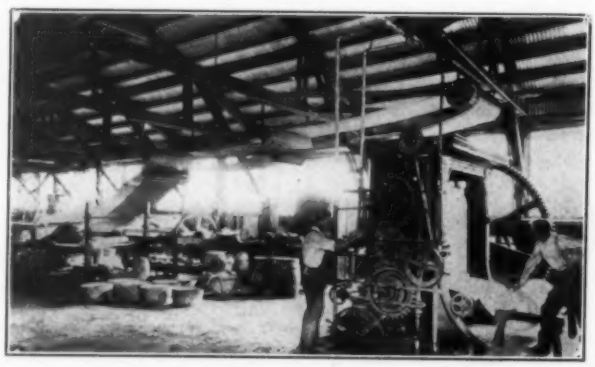
By Our Regular Correspondent.

LOS ANGELES NOTES.

LOS ANGELES is the largest city west of St. Louis, according to the United States census returns for 1920, which gives the population of Los Angeles as 575,480, in contrast with that of San Francisco, which has 508,410.

Another large rubber plant is coming to Los Angeles. It is the Fabri-Cord Tire Company of California, which has purchased thirty acres adjoining the Vista del Oro tract on Seventh street in the San Pedro harbor section of the city, and construction will begin August 1 on a plant that will ultimately cost $2,000,000. The first unit will be a three-story building of reinforced concrete, 60 by 250 feet, costing when equipped, $80,000 for the building and $200,000 for the machinery. The initial output will be 500 cord tires and 1,500 tubes a day, and 400 men will be employed. Eventually the company plans to employ 1,700. Electricity will be used wholly for power.

The E. M. Smith Co., Los Angeles, manufacturer of Emsco products consisting of rubber belting, brake linings, clutch facings and other rubber-asbestos and textile products is a twelve-year-old concern of which E. M. Smith is president and general manager. The factory buildings now built and under way are of



CALENDER ROOM, E. M. SMITH CO.

reinforced concrete and include a rubber mill, a textile mill, a power plant, garage, machine shop, belting factory, warehouse and offices. The plant is the only one west of Chicago making clutch facings for automobiles. It uses more than 25,000 pounds of canvas monthly and it is all bought in California. Emsco products are being shipped to Arizona, Texas, New Mexico, Wyoming, Oklahoma, Kansas, and other states as far east as Philadelphia.

Goodyear tires are being made in California. The first "native son" tire to be made in the Golden State and bearing the "Wingfoot" brand was turned out at the Los Angeles factory on June 14, 1920. As the casing was removed from the molds and pronounced perfect, the whistles of five Goodyear factories, namely, in Los Angeles, Akron, Ohio, Toronto, Canada, the cotton mills at Goodyear, Connecticut, and the ginning mills on the Goodyear cotton plantation in Arizona, in unison greeted the birth of the tire. It is a model 30 by 3-inch, plain tread, single-cure fabric tire of the clincher type and will be placed in the Goodyear Products Museum in Akron.

The severest test of solid truck tires ever made in this section took place recently when a 73-ton, 40-inch naval gun was transported from the Southern Pacific railroad freight yards at San Pedro to Fort McArthur, adjoining Los Angeles harbor. The huge gun was so placed that 23 tons rested on dollies and the remaining 50 tons on a single trailer, which is believed to be the greatest weight ever imposed on solid tires. Two 40 by 12 solids were used on the front wheels and four 40 by 10 solids on the rear wheels of the trailer, all Goodrich tires.

Rubber-tired auto vans have replaced the horse-drawn mail carts in Los Angeles, the postoffice department having just installed thirty-seven of the motor vehicles. There are nineteen 1-ton, thirteen ½-ton, three 2-ton, and two 2½-ton vans now in use.

W. D. Newerf, W. S. Melcher, and Carl Newerf have formed the Tire Sales Company to market in Los Angeles the Western States tires made by the Washington Tire & Rubber Co., Spokane, Washington.

While no affirmation or denial has been made by the Miller Rubber Co., Akron, Ohio., of the rumor current here for several months that it intended to build a large plant in Los Angeles, the impression persists that the company is maturing plans to that end. F. C. Millhoff, general sales manager, and W. S. Campbell, advertising manager, of the Miller company, have been spending much time lately in this section.

The U. S. Compression Inner-Tube Co., Inc., Tulsa, Oklahoma, in addition to its new plant acquired in Pennsylvania, will build another this winter on a site to be purchased immediately in Los Angeles. From this it will serve its customers in the territory west of the Rockies, and from Tulsa, those between the Rockies and the Mississippi.

It is estimated that the annual bill for tires for the 1,500 motor stages operated daily over the fine highways of California is not

NEW PLANT, SAMSON TIRE & RUBBER CORPORATION.

less than $1,200,000. The average run for each is 150 miles a day, and a mileage of 12,000 is figured for each of the five tires carried.

Roy R. Meads, president and general manager of the Pacific Rubber Co., has returned to Los Angeles from a visit to the Horseshoe tire factory in Racine, Wisconsin, and a visit to the various distributing agencies of the company on the Pacific coast.

W. J. Coe, of the United States Rubber Company's Los Angeles branch, attended the annual convention of the California Retail Shoedealers' Association which opened at San Diego on June 7.

Bert Mooser, who is the Pacific Coast representative of the India Tire & Rubber Co., Akron, Ohio., has gone East to hurry up tire shipments. Local distributers have been seriously hampered by depleted stocks.

J. Ralph Campbell, long with The Fisk Rubber Co., has been appointed manager of Guasti, House & Giulli, Inc., Los Angeles, southwestern distributer of Perfection tires. Mr. Campbell recently visited the Perfection plant at Fort Madison, Iowa.

J. A. Peterson has succeeded J. R. Campbell as manager of the Los Angeles branch of The Fisk Rubber Co., Chicopee Falls, Massachusetts. For a little more than three years he has been manager of the company's branch at Sacramento where J. A. Jack, a salesman for the last three years, has been appointed manager.

Tire users have been greatly interested in an animated cartoon recently shown here that depicted a supposed strike of abused tires against unreasonable use by their owners. The film was entitled, "The Striking Tire" and was supplied by The B. F. Goodrich Co., Akron, Ohio., as part of the nation-wide campaign against the neglect and misuse of tires.

J. B. Magee, general manager of the United States Rubber Company's southern California and Arizona branches, has been making a thorough study of trade conditions in the northern part of California, first with J. B. Brady, Pacific Coast manager, at San Francisco and afterward as far as Klamath Falls, Oregon, with T. H. Wilkinson, manager for that section, and L. M. Simpson, manager of the Sacramento branch.

The George W. Eno Rubber Co., Los Angeles, has purchased the mold for the Ehman half-sole tire from the Ehman Tire & Rubber Co., and is just concluding experiments looking toward applying this mold to a whole-sole tire which the Eno company will soon turn out in quantity under its own name.

Employes of the Los Angeles Goodyear tire plant have organized a 60-piece band under the leadership of Frank Marsales, who also heads the Elks' band in Los Angeles. The Goodyear employes have also organized a baseball team, and thus far they have won 10 of the 12 games played.

It has been claimed that half of the automobile tires made in the United States are sold west of the Mississippi river. Asked by THE INDIA RUBBER WORLD representative whether such a statement was true, an official of one of the largest tire-making concerns in the country stated that his company's sales in the fourteen states nearest the Pacific Coast and all the Pacific exports total but 10 per cent of the company's entire business.

A PIONEER TIRE CO.

A prosperous young company is the Samson Tire & Rubber Corporation, whose general offices are at 333 West Pico street, Los Angeles. Although launched during the war, it has flourished remarkably. It has a plant at Compton, a nearby city, and is running it up to capacity.

The first unit of the new plant now under way is a three-story brick building of mill construction 50 by 200 feet. Besides the batteries of machines, mixers and calenders, there will be big press-vulcanizers and the latest machines and devices for tire work. The plant will be on a main line of railroad and have its own siding. There is plenty of water, cheap electric power, and a fine class of help always available.

The officers are especially proud of the fact that the plant is free and clear, that the company has no bonds or preferred stock, and that it discounts all purchases.

The Samson concern is said to be the pioneer on the Pacific Coast in the making of full-modeled, modern constructed, supersized cord tires, facilities having been provided for turning out all sizes up to 38 by 5; and all in addition to a wide variety of standard tires.

SAN FRANCISCO NOTES.

J. W. Thomas, vice-president of the Firestone Tire & Rubber Co., and three of the factory engineers, J. C. Tuttle, A. A. Warner and L. G. Greenwald, have just completed a prolonged survey of the automobile industry on the Pacific Coast, with especial reference to road and traffic conditions affecting tire products, solid and pneumatic. Incidentally Mr. Thomas has been giving inspiring talks to Firestone tire distributers at luncheon-conferences in several coast cities.

H. P. Lawson has been appointed assistant district manager for the San Francisco branch of the Willard Storage Battery Company. Mr. Lawson, who has been with the Willard concern four years, is well-known and popular among the trade.

L. E. Crittenden has bought a half interest in the Tire Sales Company formerly owned solely by Johanna Pulver and D. P. Miles.

NORTHWESTERN NOTES.

With the first cargo of rubber brought to the northwest port since the Pacific Steamship Company established its service between Seattle and Singapore a few months ago, the Admiral line freighter *West Hartland* arrived at Seattle June 10. Since 1918, the record year in Seattle's import and export trade, most of the rubber from Singapore has moved through Gulf and Atlantic ports.

W. D. Albright, of Seattle, northwestern distributer for The B. F. Goodrich Rubber Co., has broken all records in tire shipments to the Pacific Coast. He induced his company to send a trainload of tires on May 29 from the Akron factory to relieve a pronounced shortage in the Northwest, which is felt by all dealers.

The Michelin Tire Co. has leased a two-story building at 41 Front street, Portland, Oregon, from which C. L. Normyle, branch manager, will supervise Michelin sales all over the Northwest through sub-branches at Seattle, Spokane, Butte, Great Falls and Boise.

The Emery Retread Co. will erect a three-story modern tire service building at 1115 East Pike street, Seattle.

John A. Leatherman, J. M. Albert, and R. W. Huntoon, of Seattle, have incorporated the Leatherman Tire & Rubber Co. with $2,000,000 as authorized capital.

The first unit of the new factory of the Occident Rubber Co., Kirkland, Washington, has been completed and $20,000 worth of up-to-date machinery has been installed. Work has also been started on a second building, the two to cost $150,000. While the company will for a while continue to make a general line of rubber goods, it is also planning to turn out automobile tires later in the year.

SOUTHWESTERN NOTES.

What is practically an addition to the cotton acreage of Arizona is the new plantation being developed just across the Mexican border, where Harry Mount, president of the El Tigre Oil Co., Tampico, Mexico, and Arturo de la Torre, Mexico City, have taken title to several thousand acres of land in Sonora on the eastern bank of the Colorado river and extending from Arizona to the Gulf of California. The sale was made by the heirs of the Andrade estate who live in Los Angeles. Long-staple cotton will be planted at once and experts say the section is ideally suited for such a crop.

Owing to scarcity of labor in Imperial Valley, some cotton growers are paying as much as $1 an hour to Hindu cotton-choppers.

The Spreckels "Savage" Tire Co., San Diego, has for a second year been granted the exclusive concession for the sale of tires and tubes in Yosemite National Park.

Through its purchase from Miller & Lux of the Bottonwillow 100,000-acre ranch thirty miles west of Bakersfield, the Goodyear Tire & Rubber Co. will become, it is said, the largest cotton-raising concern in the world. The big California tract, like the others owned by the Goodyear concern in Arizona, will be planted to Pima long-staple cotton needed for tire fabric.

According to F. W. Griffeth, vice-president of the Garlock Packing Co., Palmyra, New York, his company is considering the building of a western factory in Los Angeles.

THE TOWN OF LITCHFIELD.

Military triumphs in the olden days resulted in naming cities after great leaders, as Rome after Romulus, Constantinople in honor of Constantine, and so on. To-day industrial leaders receive a like honor. Thus Paul W. Litchfield, one of the most brilliant and successful of the latter-day rubber superintendents, has his name attached to a thriving town in Arizona where the Southwestern Cotton Co. has its headquarters. It is an honor well deserved and will bring good fortune to the community.

(Universal Film Manufacturing Co.)
THE TOWN OF LITCHFIELD, ARIZONA.

THE "TRUFLITE" TENNIS BALL.

One of the new tennis balls is made with a four-piece center with rubber plug, in such a way, it is claimed, that there is no opportunity for leakage or deflation. The special feature of this ball is the felt cover which is applied by a special process so as to be stitchless and seamless. The "Truflite" tennis ball was approved by the United States National Lawn Tennis Association in February of this year. (The Seamless Rubber Company, Inc., New Haven, Connecticut.)

(Patent applied for.)
"ESSEX" HEEL REST.

ACCELERATOR HEEL REST.

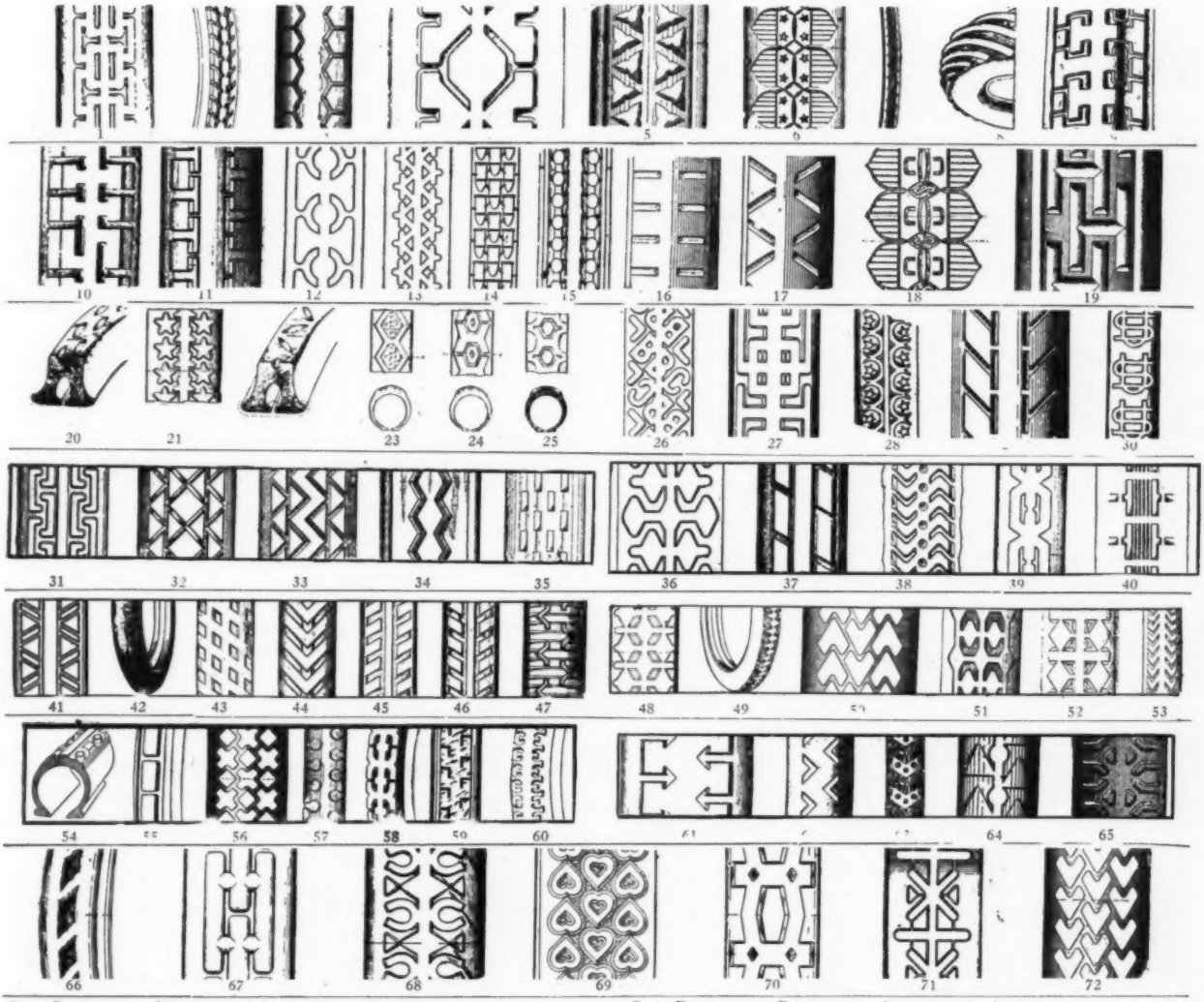
A heel rest for use by automobile drivers provides deep curved recesses of rubber for the heel to brace against, so that the pressure on the heel is not at the extreme end but is flung forward where it naturally would come when walking. The curve prevents the heel from slipping sideways and offers real support. The "Essex" heel rest comes packed ten in a carton. A patent on this device has been applied for. (Essex Rubber Company, Trenton, New Jersey.)

PROTECTIVE RUBBER BLANKET FOR ELECTRIC LINEMEN.

A blanket intended for use by electric linemen in repairing cross-country high-voltage lines is composed of special character duck coated on both sides with a rubber compound to resist high voltage. The edge is beaded on all four sides to strengthen it and prevent tearing, and the material is extremely pliable. The blanket measures 35¼ inches square and weighs from 5½ to 6 pounds. (W. H. Salisbury & Co., Inc., 308-310 West Madison street, Chicago, Illinois.)

Pneumatic Tire Tread Designs.

September, 1918, to September, 1919.



Cut No.	Patent No.	Patentee or Assignee and Address.
(1).	52,114.	The Long-Wear Rubber Co., Elyria, Ohio.
(2).	52,116.	B. H. Pratt, Milwaukee, Wis.
(3).	52,122.	S. R. Vasbinder, Fulton, Ill.
(4).	52,153.	The Star Rubber Co., Akron, Ohio.
(5).	52,170.	W. C. Owen, Cleveland, Ohio.
(6).	52,178.	H. A. Phillips and J. G. Stamm, Cleveland, Ohio.
(7).	52,224.	Indiana Rubber & Insulated Wire Co., Jonesboro, Indiana.
(8).	52,227.	J. W. Richardson, Detroit, Mich.
(9).	52,232.	A. E. Wing, Cleveland, Ohio.
(10).	52,266.	The Rubber Products Co., Barberton, Ohio.
(11).	52,298.	Armstrong Rubber Co., Newark, N. J.
(12).	52,303.	A. E. Pearce and H. H. Swan, Ashtabula, Ohio.
(13).	52,304.	A. E. Pearce and H. H. Swan, Ashtabula, Ohio.
(14).	52,306.	United States Tire Co., New York City.
(15).	52,329.	The Fisk Rubber Co., Chicopee Falls, Mass.
(16).	52,430.	Ajax Rubber Co., Inc., Milbrook, N. Y.
(17).	52,431.	Ajax Rubber Co., Inc., Milbrook, N. Y.
(18).	52,459.	H. A. Phillips and J. G. Stamm, Cleveland, Ohio.
(19).	52,573.	H. H. Hewitt, Buffalo, N. Y.
(20).	52,650.	The Goodyear Tire & Rubber Co., Akron, Ohio.
(21).	52,686.	The Star Rubber Co., Akron, Ohio.
(22).	52,701.	The Goodyear Tire & Rubber Co., Akron, Ohio.
(23).	52,702.	A. Kanzee, Berkeley, Calif.
(24).	52,703.	A. Kanzee, Berkeley, Calif.
(25).	52,704.	A. Kanzee, Berkeley, Calif.
(26).	52,893.	The Brunswick-Balke-Collender Co., Chicago, Ill.
(27).	52,899.	The McGraw Tire & Rubber Co., East Palestine, Ohio.
(28).	52,959.	W. A. Miller, Columbus, Ohio.
(29).	52,962.	A. L. Pashek, Newark, N. J.
(30).	52,975.	United States Tire Co., New York City.
(31).	52,725.	Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., Can.
(32).	52,731.	T. J. Edwards, Akron, Ohio.
(33).	52,732.	T. J. Edwards, Akron, Ohio.
(34).	52,749.	The Goodyear Tire & Rubber Co., Akron, Ohio.
(35).	58,822.	H. H. Hazeltine, Tacoma, Wash.
(36).	53,006.	J. & D. Tire Co., Charlotte, N. C.

Cut No.	Patent No.	Patentee or Assignee and Address.
(37).	53,066.	F. S. Dickinson, New York City.
(38).	53,070.	The Miller Rubber Co., Akron, Ohio.
(39).	53,083.	Norwalk Tire & Rubber Co., Norwalk, Conn.
(40).	53,096.	The Dayton Rubber Manufacturing Co., Dayton, Ohio.
(41).	53,100.	A. E. Braden, Tacoma, Wash.
(42).	53,108.	Converse Rubber Shoe Co., Malden, Mass.
(43).	53,111.	W. R. Blowers, Omaha, Neb.
(44).	53,112.	W. R. Blowers, Omaha, Neb.
(45).	53,113.	W. R. Blowers, Omaha, Neb.
(46).	53,114.	W. R. Blowers, Omaha, Neb.
(47).	53,116.	Combination Rubber Manufacturing Co., Bloomfield, N. J.
(48).	53,129.	The McGraw Tire & Rubber Co., East Palestine, Ohio.
(49).	53,133.	The Gordon Tire & Rubber Co., Canton, Ohio.
(50).	53,143.	The Oldfield Tire Co., Cleveland, Ohio.
(51).	53,146.	J. & D. Tire Co., Charlotte, N. C.
(52).	53,151.	C. P. L. Huston, Plainfield, N. J.
(53).	53,190.	Wicks' Tire & Rubber Products Co., Seattle, Wash.
(54).	53,223.	E. Hopkinson, New York City.
(55).	53,278.	Washington Rubber Co., Washington, Pa.
(56).	53,279.	Firestone Tire & Rubber Co., Akron, Ohio.
(57).	53,292.	E. H. Cooper, Kansas City, Mo.
(58).	53,316.	The General Tire & Rubber Co., Akron, Ohio.
(59).	53,331.	The Gates Rubber Co., Denver, Colo.
(60).	53,372.	Iowa Cord Tire Co., Des Moines, Ia.
(61).	53,494.	Hood Rubber Co., Watertown, Mass.
(62).	53,653.	W. B. Buckley, Washington, D. C.
(63).	53,511.	A. L. Weeks, Gadsden, Ala.
(64).	53,555.	C. R. Baker, Akron, Ohio.
(65).	53,553.	G. S. Anderson, Akron, Ohio.
(66).	53,410.	Revere Rubber Co., Providence, R. I.
(67).	53,427.	The B. F. Goodrich Co., New York City.
(68).	53,479.	Racine Auto Tire Co., Racine, Wis.
(69).	53,498.	M. Greenspan, Chicago, Ill.
(70).	53,589.	B. W. Hartley, Hallevbury, Ont
(71).	53,608.	S. Reels, Houston, Texas
(72).	53,661.	The Oldfield Tire Co., Cleveland, Ohio.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

A POINT about the increasing prices of rubber goods, notably those in which cotton and other high-priced materials figure largely, has been brought forcibly to my attention. This is that large buyers such as the big manufacturing combines are not replacing their rubber goods so frequently as has been their wont. They have discovered that where more care is taken of them their life and utility can be made to last longer; in other words, they are getting more work out of them, and subordinates have been instructed to fall in line with the new policy. I met a rubber manufacturer recently who was taking quite a gloomy view of this new procedure which had led to certain customary orders being adjourned to some future date. This cannot, fortunately, have anything to do with the Greek Calends because with the most careful usage rubber manufactures have only a finite life.

The centenary of the foundation of Thomas Hancock's rubber works in Goswell road falls in the present year, and it is interesting to hear that the directors of the present company are recognizing the event by reprinting his "Personal Narrative" of the origin and progress of the "Caoutchouc or India-Rubber Manufacture in England." I do not know whether there has been a previous reprint, but the date of publication of the copy in my possession is 1887. No doubt there will be many among the younger rubber chemists, if not among those of mature years, who will be glad of the opportunity of possessing a copy of the book.

THE PROOFING TRADE.

The fall which has taken place in the price of seed oils is somewhat slow in its effect on the price of rubber substitutes, no change to the advantage of the buyer of the latter having occurred at the time of writing. Of course the increased cost of substitutes is not all attributable to oil values, as labor and chemicals are also up. With regard to vulcanizing, although sulphur may be expected to come down, there seems little likelihood of bisulphide of carbon and chloride of sulphur following in its wake. This bears upon the relative cost of the dry-heat and cold-cure processes. At one time the cold cure was decidedly the cheaper of the two, but now they are much the same and it has become customary to take the costs of the two processes as similar in works calculations.

Recrimination between the cloth supplier and the waterproofer, where there is any complaint by the purchaser of the finished article, is a well worn theme, each in perfect faith putting the blame upon the other. One or two cases which have given rise to the customary amenities have been associated with khaki-dyed cloth as a component part of rubber-proofed clothing, and altogether the defects seem trivial enough. Nothing is alleged against the waterproof properties of the garments, the complaint being limited to the fact that when tested with water by the special method adopted by the purchaser some alteration in the tint of the khaki color takes place. With regard to the various methods used by purchasers to test waterproofs, it certainly seems desirable that some standard test should be adopted and also that this test should be specified and particularized when the goods are being contracted for. As it is, the person is at a disadvantage in not knowing to what test if any the goods are to be subjected.

Reports from the works indicate that as regards new business, slackness is somewhat prevalent, and this may be taken as supporting the statements emanating from other trades to the effect that the populace is not spending money so freely as was the case a year ago. It must be remembered in this respect that the millions distributed among officers and men have now been spent, except in those few cases where the gratuities were invested.

Another instance where the making-up side of the business is to be carried on by a separate company associated with the rubber works is that of the Premier Waterproof and Rubber Co., Limited, of Manchester. A new company called Premier Garments, Limited, has been registered with a capital of £90,000 in £1 shares, of which 80,000 are cumulative preference, to take over the making up and selling of the waterproof garments and piece goods of the above company. Until the new premises are ready for occupation the new company will conduct its business from the rubber works. W. Lilley is on the board of both companies.

The police in some of our smokiest towns are now being supplied with the well-known white, single-texture mackintoshes worn in the past almost exclusively by coachmen. They are certainly more conspicuous than the ordinary dark blue or black coats hitherto worn, but it is to be hoped that the makers will not be held responsible if the white color undergoes a change.

The report of J. Mandleberg & Co., Limited, the Manchester waterproofing house, for 1919 is of the usual satisfactory nature, the distribution on the ordinary shares including a bonus of 7½ per cent, being 22½ per cent. As in many other businesses the high cost of materials and the necessity for expansion to cope with new business have made it imperative to issue further capital and it is proposed to issue a further 150,000 ordinary £1 shares and also to create 150,000 eight per cent preferred ordinary shares. These shares are to be offered at par to directors and others engaged in the management of the company at the directors' discretion.

SOCIETY OF CHEMICAL INDUSTRY'S ANNUAL REPORTS.

The volume for 1919 is now at hand, and, as was the case in 1918, the chapter dealing with progress in the rubber industry is from the pen of Dr. Twiss, chief chemist of the Dunlop Rubber Co., Limited. He mentions that now the war is over, details referring to manufactured goods are more frequent, and gives footnote reference to various papers that have been published in THE INDIA RUBBER WORLD. To the busy man who, despite the best intentions, cannot always manage to keep up with the flow of technical literature, the summary given by Dr. Twiss of the scientific papers relating to the industry published during the year will be found very useful. Rubber patent literature as such is not specially dealt with, perhaps because of the dreary monotony of the rubber-like bodies made from fish, tar or what not, and which the inventor rarely lives to see in regular use. The tendency of fine powders, such as precipitated barium sulphate, to become coarser under the mixing process is specially referred to in connection with Harting's United States patent covering the use of minced powders in the form of a paste with water or other liquid. Dr. Twiss, however, thinks that the practical difficulties in the way of doing this appear to be serious, though he suggests that glue and other colloids might usefully be applied in the form of an aqueous jelly. Referring to the use of glue in rubber, Dr. Twiss quotes American practice without saying whether it is used in Europe.

FUSION OF TIRE MAKING AND COTTON SPINNING INTERESTS.

It is announced that Belgrave Standard Tyres, Limited, of Oldham, has acquired a controlling interest in the Beldam Tyres, Limited, of Brentford, near London. Other firms in this fusion are the Belgrave Mills Co., Oldham, the Standard Tyres Co., Oldham, the Standard Tyre and Rubber Manufacturers, Limited, of London; the spinning and manufacturing

concerns of Robert McLure and Sons, Limited, of Stockport and J. and W. Bourne, Limited, of Highton, near Preston. It would seem from this that the tire making part of the combine will have no need to go short of textile fabric.

GALOSHES.

The position as regards retailers' supplies is very different from what it was a year ago. The erstwhile scarcity has given place to plentiful stocks which at the end of the winter season are causing some little perturbation to the retail rubber stores. As the winter was very mild throughout and there was hardly anything in the way of a snowfall, sales have not been up to the average. It might have been thought that the extremely wet period of April and the first three weeks of May would have led to increased sales, but this has not been the case. The British seem as conservative as ever as regards their limited use of galoshes; there is only a run on them in times of heavy snowfall, and they are not used for rain, even in these days of expensive and often leaky boots. Of course galoshes are more expensive than they were, the ruling price to-day being 10 shillings for men's and 7 shillings, sixpence for ladies'. A large number of these are Canadian, which seem to have ousted the American brands so well known in pre-war days. I am told that the American are now too expensive and also that the high price of the Canadian is due to freight and duty, or at any rate to costs over and above those of manufacture. The price of the Canadian and British galoshes is the same.

RUBBER GROWERS' ASSOCIATION PRIZES.

The Rubbers Growers' Association, Inc., London, offers prizes amounting to £5,000 for new ideas and for encouraging new uses of rubber; a first price of £1,000, three prizes of £500, and ten premiums of £100 each. A sum of £1,500 in addition will be divided among other competitors who may offer ideas of value. Suggestions must be in by December 31, 1920. They must be practical and likely to increase the demand for the raw material.

Competitors are required to give: (1) a brief description of the idea; (2) a full, detailed description, with explanations, samples, diagrams and designs, so as to make it possible to work out the idea; (3) a statement of the facts on which the idea is based and of the special advantages the competitor has had for acquiring his knowledge; (4) any available information about cost, demand and the quantity of raw rubber likely to be needed; (5) whether the idea is partly or wholly original or not; and (6) whether it is covered in any way by patents or if patents have been applied for.

Entries should be addressed to The Rubber Growers' Association, Prize Competition, care of Fitzpatrick, Graham & Co., 95a Chancery Lane, London, W. C. 2.

FOREIGN TARIFF NOTES.

LITHUANIA admits crude rubber free of duty, but imposes a duty of 20 per cent ad valorem on india rubber products.

Malta's new preferential tariff in favor of Great Britain reduces the 15 per cent ad valorem duty on all rubber goods, now in force, to 10 per cent, for those of British manufacture.

France (April 23) forbids the importation of dress shields, suspenders, garters and belts; manufactures with mountings of rubber or celluloid, and fountain pens.

Australia's revised tariff, in force March 25, 1920, permits the free importation of crude, waste, reclaimed, and masticated rubber; hard rubber in sheets, rubber thread and elastics. It increases the duty on rubber belting, hose, mats, druggists' sundries, other manufactures of rubber and rubber substitutes, and tires and tubes to 40 per cent ad valorem; but pneumatic tires weighing 2½ pounds or over and tubes weighing one pound or over must pay *2s. 6d.* a pound, if that amounts to more than the ad valorem duty. The preferential rates for British manufactures are 25 per cent. For rubber shoes the duty is 35 per cent, preferential 25 per cent; for rubber boots 10 per cent, British free. Insulated wire and cables 15 per cent, British free.

The Serb-Croat-Slovene State, of Jugoslavia, on March 19, 1920, prohibited the importation of rubber or part rubber boots and shoes, floor cloths and mats, toys and articles of soft or vulcanized rubber, hard rubber or gutta percha, or wholly or partly covered, coated, or saturated with rubber, if combined with the finest materials or precious metals.

Austria requires an export license for raw, reclaimed, or waste rubber, and for pneumatic tires and insulated wire and cables.

Germany, since February 28, 1920, requires licenses for the exportation of crude and purified rubber, gutta percha and balata; rubber, gutta percha and balata scrap and waste; and rubber substitutes. Furthermore for all manufactures of rubber, or partly of rubber export licenses are required.

Persia and Great Britain have formed a new commercial agreement which went into effect April 2, 1920. By it crude rubber enters Persia free; if prepared, in slabs, sheets or threads, it pays a duty of 3 kran a batman (21 cents on 6½ pounds). Rubber shoes pay 5 kran (35 cents) a batman, but if the rubber is combined with textiles which are more valuable than the rubber, the shoes rank as clothing and pay 15 per cent ad valorem. Tissues covered with rubber pay 10 per cent, and all other manufactures, including tires for bicycles or vehicles, 12 per cent ad valorem. All these goods must pass through specified custom houses, except by special permission.

EUROPEAN NOTES.

PIRELLI & CO., OF MILAN, ITALY, made net profits of 5,420,000 lire in 1919, paying dividends of 55 lire per share. The company has decided to increase its share capital from 40,000,000 lire to 60,000,000 lire. One lira equals $0.193.

A cable manufacturing company has been started at Södertälje, not far from Stockholm, Sweden, by the A. B. Svenska Maskinverken with a share capital of 18,000,000 kroner, the mother company retaining 8,000,000 kroner of the amount. A krona equals about $0.27 United States currency.

France imported 32,455 metric tons of rubber in 1919 as against 19,927 tons in 1918, the values being 216,130,000 francs in 1919 and 113,578,000 francs in 1918. Of this amount 12,638 tons came from English ports, 3,235 tons from Brazil, 516 from French Congo, 321 from Senegal, 1,000 from the west of Africa, 8,264 from the British Indies and 6,481 tons from other countries. Besides this 11,722 tons of manufactured rubber goods were imported in 1919, including tires, tubes, shoes, clothing, bandages, tubing and so on, worth 221,134,000 francs. A large proportion came from the United States.

American automobile tires are in demand in Constantinople, the prices, even at the present rates of exchange, being apparently no obstacle. Salesmen who could not sell tires in France have disposed of them in the Turkish capital.

Kan & Kan, dealers in rubber, asbestos, etc., have removed from Doetinchem, to 17 Utrechtschestraat, Arnhem, Netherlands.

The India Rubber Products Co., Limited, 47-48 Farringdon street, London, E. C. 4, a branch of the United States Rubber Co. and associated companies, has now registered for the future conduct of its business as the "United States Rubber Co., Ltd." Other offices are maintained at Birmingham, Liverpool, and Glasgow.

Rubber was honored by King George V. through the inclusion, among the birthday honors for this year, of knighthood for Sir Henry Alexander Wickham, who forty-odd years ago, conveyed from Brazil to England the seeds of *Hevea* which were used to start the Ceylon and East Indian rubber plantations.

NETHERLAND INDIES NOTES.

RUBBER ACREAGE IN THE DUTCH EAST INDIES.

A VERY CAREFUL INQUIRY into the acreage devoted to rubber in the Dutch East Indies in the year 1918 has been made by the Trade division of the Department of Agriculture, Industry and Commerce (*"Landbouw, Nijverheid en Handel"*), Netherlands India officially is divided into two parts, "Java and Madura" and "the Outer Possessions," which latter include Sumatra, Borneo, Celebes, New Guinea and the lesser islands of the East Indian archipelago. The investigators, for scientific reasons, distinguished between the estates devoted to rubber alone and those which raised mixed crops, and also took account of the different kinds of rubber trees planted. The figures follow, areas being given in hectares:

	Number of Estates.	Planted Areas.	Productive Areas.	Hevea Brasiliensis.	Ficus Elastica.	Manihot.
I. Planted With Rubber Only.						
Java	76	28,629	20,940	28,041	427	161
Outside	[1]161	109,398	76,571	108,703	695	...
II. Rubber and One Other Crop.						
Java	50	11,390	5,696	10,239	634	517
Outside	50	21,802	13,481	20,829	973	...
III. Rubber and Two Other Crops.						
Java	11	1,001	388	953	34	14
Outside	10	4,715	2,021	4,484	231	...
IV. Rubber and Three or More Other Crops.						
Java	6	343	4	97	231	14
V. Mixed Crops.						
Java	250	79,727	25,414	.....	...	...
Outside	63	16,323	5,332	.....	...	...

[1]122 on east coast of Sumatra.

Of the above number of estates with mixed crops, there were 152 in Java and 39 in the outside possessions which had areas planted to rubber only. The figures for these pure rubber acreages were:

	Number of Estates.	Planted Areas.	Productive Areas.	Hevea Brasiliensis.	Ficus Elastica.	Manihot.
Java	152	31,923	22,572	29,298	2,440	190
Outside	39	14,307	9,324	13,278	1,029	...
Totals of Tables I-V.						
Java	393	121,100	52,442	38,330	1,326	706
Outside	284	152,238	97,405	134,016	1,899	...
Dutch East Indies	677	273,338	149,847	172,346	3,225	706

The average size of an estate devoted solely to rubber was 376.7 hectares (930.45 acres) in Java and 679.5 hectares (1,678.4 acres) in the outside possessions. Wild rubber, jelutong, gutta percha and the like are not included in the survey, which deals purely with cultivated plantation rubber.

FAR EASTERN NOTES.

THE MARKET for bicycle tires in Japan is probably greater than in any country of equal population. Not many Japanese can buy automobiles or motorcycles, but nearly every one can afford the cheap bicycles made in Japan. The imports of tires, which amounted to $519,330 in 1913, were $559 in 1918; the cause is the cheapness of the domestic article—the cheapest tires cost $2.65 and the dearest $6.50, while imported tires must pay a duty of $42.75 on 100 pounds.

The Japanese rubber plantations in Malaya are chiefly in the State of Johore and are about 93,803 acres in extent.

Burma's exports of rubber during the war years and since have been as follows: 1919, 4,149,242 pounds, valued $1,520,935 American money; 1918, 2,634,380 pounds ($1,381,943); 1917, 2,301,157 pounds ($1,425,244); 1916, 1,285,984 pounds ($995,611); 1915, 987,392 pounds ($632,594). Of this 67,365 pounds, valued $13,659, were sent directly to the United States in 1919, and 76,246 pounds ($46,623) in 1918.

Motor trucks are coming into general use in Singapore to convey plantation rubber from wharves to stores or from one go-down to another. Auction sales are made subject to delivery within two days, which makes trucks almost a necessity, as the bullock carts are slow and carry only limited loads.

A Norwegian company, the Norsk Sumatra Co., with a capital of 1,800,000 kroner, has undertaken rubber planting in Sumatra.

The oldest rubber plantation in Cochin China was started in 1897, but the large estates date only from 1907. At present there are 49,400 acres planted in Cochin China and about 2,470 acres in the rest of Indo-China; the area is increasing by about 2,500 acres a year. The soil and climate are suitable, labor is plentiful, but capital is lacking.

Ceylon proposes to forbid the importation of all *Hevea* seed from any part of South America, owing to reports that leaf disease is common on the Amazon, as well as in Surinam and British Guiana, where it has practically killed rubber growing. In this it follows the lead of the Federated Malay States, which have prohibited the importation of seed from British Guiana since 1917. The leaf disease was brought to Surinam from Brazil about ten years ago.

Rubber in the Sultanate of Brunei in British Borneo is the chief crop raised for exportation. The business has been in a critical condition since 1918, owing partly to the fall in the price of rubber and partly to the lack of labor. The Brunei native is a good worker, but he takes to fishing or to work in the woods rather than tilling the soil, and, further, does not like to go far from home. The future of rubber depends on the importation of labor, coolie or other, from abroad.

The Selangor Rubber Co., one of the pioneer British rubber companies in the Malay peninsula, is now 21 years old. In 1899, when the bicycle boom was in full swing, but more than twenty years after Wickham had brought the *Hevea* seed from Brazil and Hooker and his assistants had demonstrated how well it could grow in Ceylon, Malaya and Southern India, the company took up 200 acres planted with trees one year old. It now possesses about 2,700 acres and fifteen years ago owned nearly twice as much land. It has turned out over seven million pounds of rubber, worth £1,140,000.

British North Borneo exported 8,801,795 pounds of rubber in 1919, being 50 per cent more than in 1918.

New Zealand expects to provide asbestos for its own needs from native sources. Large deposits of asbestos and of French chalk exist at Takala in Nelson province and also near Matueka.

A British combination of tire manufacturers is planning to build a tire and rubber goods factory at Howick in Natal and to amalgamate with itself the South African Rubber Manufacturing Co., of Johannesburg. It will be a year before they can get to work as the machinery must be sent out from England.

From an estate of 107 acres in Selangor (Federated Malay States), the Tremelbye Rubber Company reports a yield of 705 pounds of rubber per acre for 1919.

AFRICAN NOTES.

IN SOUTHERN NIGERIA many of the Pará rubber trees planted under government supervision have reached tapping age. In the Benin district 250,000 *Hevea* trees have been planted. The export for 1918 amounted to 352,504 pounds, most of it Pará rubber.

Rubber in Uganda is displacing coffee on some plantations; 11,255 acres, with coffee as a side crop, have been planted with Pará trees by European owners. The exports of rubber in 1918 were 253,063 pounds, valued at £12,893; in 1917 they were 108,336 pounds, worth £9,867. The natives also have planted some Pará and a considerable quantity of Ceará.

In Italian Somaliland the raising of *Manihot glaziovii* has begun.

Former German East Africa exported in the fiscal year 1918-19 344,700 pounds of rubber, worth 164,534 rupees.

In 1918 Mozambique exported £1,212 worth of rubber, most of it going to the United States.

In 1913 no American motor car could be found in French West Africa; by the end of 1919 there were 150 passenger automobiles, 80 motor trucks and 15 motorcycles. They are distributed as follows:

	Autos.	Trucks.	Motorcycles.
Senegal	87	40	1
Upper Senegal and Nigeria	12	11	4
Ivory Coast	26	9	..
Dahomey, French Togoland and the Kameruns.	25	20	15

SOUTH AMERICAN NOTES.

IN ARGENTINA an exposition of North American manufacturers will be held in November next, in the buildings of the Sociedad Rural in Palermo, Buenos Aires. It is designed to bring the attention of South Americans to the products of the United States and has the support of the Chamber of Commerce of the United States in the Argentine Republic.

BRAZILIAN EXPORTS OF RUBBER FOR 1918 AND 1919.

From—	1918.	1919.	To—	1918.	1919.
Manáos .. ....*tons*	8,262	14,037	Germany .....*tons*	.....	1
Itacoatiara	....	112	Argentina	127	61
Pará	13,525	17,764	Belgium	.....	22
Ilha	47	96	Denmark	.....	7
Maranhão	16	42	United States	17,886	23,299
Fortaleza	147	485	France	971	2,556
Recife	9	48	United Kingdom...	3,341	6,769
Bahia	234	334	Italy	88	1
Rio	82	87	Spain	68	.....
Santos	68	...	Holland	.....	328
Corumba	272	247	Portugal	2	32
			Sweden	.....	15
			Uruguay	179	161
Total .....*tons*	22,662	33,252	Total .....*tons*	22,662	33,252

	Average for 5 Years Before War. 1909-13.	Average for 5 War Years. 1914-18.	1918.	1919.
Totals in tons...	38,528	31,367	22,662	33,252
Value in contos.	260,473	123,868	73,728	105,537
Value in £1,000	17,020	6,615	3,998	6,240

Of total exports of 33,252 tons in 1919, 53.5 per cent were shipped at Pará, 42.3 per cent at Manáos, 0.4 per cent at Itacoatiara and Ilha, and 4.2 per cent at sundry ports.

BRAZILIAN RUBBER EXPORTS DECLINE.

The total shipments of crude rubber from the ports of Pará, Manáos, and Itacoatiara, Brazil, and Iquitos, Peru, are decreasing, as is shown in the following table:

	1919.	1920.
January .....*pounds*	6,624,915	6,273,039
February	9,242,309	8,162,264
March	9,512,787	6,916,352

The price of this commodity continues to be low, and the effect of the low price is seen in the refusal of merchants to place large orders for forward delivery.

RUBBER DORMANT IN DUTCH AND BRITISH GUIANA.

By Our Regular Correspondent.

IT WAS in 1910-11, during the great rubber boom, that Dutch Guiana contracted rubber fever. Rubber planting was the topic of the day in those days; fortunes were to be made and speculation ran high. The demand on the Agricultural Department for seeds could hardly be met; thousands upon thousands were imported from Ceylon and other rubber-producing countries by the Government and sold to planters and others interested in this enterprise. The result of all this is too well known to readers of THE INDIA RUBBER WORLD, and, although the expected fortunes were not realized, still the great boom has done Dutch Guiana a good turn and who knows what the future has in store for the colony. Rubber is bound to make good. All that is required is cheap production and that will eventually come.

Rubber production in British Guiana is practically at a standstill at the present time, as the foreign market hardly makes its collection a profitable undertaking. It is doubtful that the collection of rubber under existing conditions will pay. The trees are there either to be tapped unprofitably or allowed to remain untapped—preferably the latter course, until there is a greater demand for rubber and improved labor conditions make its collection a profitable concern. There is at present a greater demand in London for balata than for rubber, which brings only two shillings and three pence a pound. With the present high price of labor, it is impossible for the colony to compete against the rubber-producing countries in the East.

The presence of rubber leaf disease in the British colony is also a serious factor in the conditions operating against the production of rubber. Last year the Consolidated Rubber & Balata Estates, Limited, reported only a very small quantity of rubber from their plantations, owing to the severe attack of leaf disease from which the trees had not recovered. Considerable money was spent to eradicate the disease, but without success, and new planting was abandoned. The leaf disease is still causing a great deal of trouble and adds to the already high cost of production.

While there is little or no rubber activity at present in British Guiana, there is no reason to consider the industry altogether dead. After the great rubber boom between 1910 and 1911 the production dropped considerably in 1912, when only 216 pounds were exported, but the output rose to 1,340 pounds the following year, dropped to 1,107 pounds in 1914, and rose again in 1915 to 4,603 pounds. The export figures went as high as 15,586 pounds in 1916, dropped to 14,781 pounds the following year and reached their highest—23,854 pounds—in 1918. Although conditions were not very favorable in 1919, the total export of rubber from British Guiana was the second largest within the eight years under review, amounting to 17,793 pounds. During the first four months of this year 4,760 pounds were exported. The figures quoted do not seem to justify the view that the industry is abandoned.

It has been successfully demonstrated by experimental plantings in British Guiana that large areas are eminently suitable for the cultivation of Pará rubber. Tapping the Pará rubber trees found in the colony was begun in 1910 on two estates on the Demerara river. The quality of the rubber was good and it was valued very highly in the London market. Since then there has been a general disposition in British Guiana to plant *Hevea brasiliensis.*

The cost of rubber cultivation also had special attention and investigation by the Department of Science and Agriculture in 1911, when, on flatlands which required to be thoroughly drained and cultivated, the cost was estimated to be from $65 to $70 per acre during the first year, with an annual expenditure of from $25 to $30 per acre in subsequent years.

There are extensive rubber cultivations in British Guiana and it is regrettable that tapping operations on a large scale cannot proceed, owing to the labor conditions and the unremunerative rubber market.

In Dutch Guiana the labor question is practically settled, for large numbers of Javanese are arriving, and these are expert tappers and best adapted for rubber enterprises.

It is to be hoped, however, that both British and Dutch Guiana in the course of time will become large rubber producing countries.

BALATA NOTES FROM DUTCH GUIANA.

The year 1919 closed with a fairly satisfactory export sheet. The balata exported to the outside world and produced under the most trying circumstances has proved that the colony is still a valuable asset to the Netherlands.

The balata exported amounted to 493,907 kilos, of which 38,348 kilos was sent to Holland, 138,302 to the United States, 49,869 to France, 259,290 to England, 8,097 to other countries.

The importations from the United States reached the high figure of $4,313,101, and the total value of exports to that country

from Dutch Guiana was 2,015,505 florins or approximately $900,000.

Since the beginning of the year balata gathering has been taken rather seriously. Many large expeditions left Paramaribo for the several districts and should the weather be favorable the crop for 1920 will be a record one. There is everything at hand to make the crop of 1920 a success; the provisions from the United States are pouring into the country regularly now; the men to operate the trees are there; the money to pay them for their work is in the bank and, last but by no means the least, the trees from which the balata is gathered are in abundant evidence.

CHICLE GUM IN BRITISH GUIANA.

Announcement has been made in a report submitted by Consul McCunn of the discovery of chicle-producing trees in British Guiana. Prospecting expeditions sent into the interior have recently returned to Georgetown with fully 600 pounds of chicle, and preparations are now being made by the discoverer, who holds a concessional right over 6,200 square miles of territory, to send out four prospecting parties in order to continue investigations and ascertain the capacity of the tract. Territory thus far examined is reported to be capable of yielding 200,000 pounds of gum annually.

THE PRESENT STATUS OF LONG-STAPLE COTTON.

SOME INTERESTING INFORMATION on the long-staple cotton in the United States is imparted by the Department of Commerce in Bulletin No. 140 of the Census Bureau on "Cotton Production and Distribution." The years given are generally the "growth" years for cotton, which lap over the following calendar year.

The need of long-staple cotton for the manufacture of thread, automobile tires, and high grade fabrics has caused the demand to far exceed the production. There was a time when the long-fiber Sea Island cotton grown in the West Indies formed the greater part of the cotton used in Europe; the whole world product of this variety at present, about 50,000 bales, is comparatively insignificant. The quantity of long-fiber cotton produced in Egypt last year was about 900,000 bales, and the quantity of upland and American-Egyptian cotton with a staple of 1⅛ inches or more in length produced in the United States was 1,394,000 bales. Long-staple cotton is also produced in relatively small amounts in India, Brazil, Peru, and some other countries. The amount of long-staple cotton, that is, cotton having a fiber of 1⅛ inches or more in length, produced in the world in the growth year 1918 probably did not exceed 2,500,000 bales.

SEA ISLAND COTTON.

The Sea Island cotton crop of 1918 amounted to 52,208 bales or 20,450,000 pounds gross weight, being 40,411 bales less than the previous crop and 65,351 bales less than the 1916 crop. The reduction is due to the ravages of the boll weevil and to the consequent reduction in acreage cultivated on that account. Where they stick to cotton, the farmers plant early maturing upland varieties instead of Sea Island, which takes long to ripen. The best Sea Island in the United States is grown on the islands off the coast of South Carolina; it is also grown in Georgia and in Florida.

AMERICAN-EGYPTIAN COTTON.

The imports of Egyptian cotton into the United States in the fiscal year ended July 31, 1919, amounted to 100,006 bales of 500 pounds each, compared with 114,580 bales for 1918, 199,892 bales for 1917 and 350,796 bales for 1916. The demand for Egyptian cotton led to its being grown in the United States, and its culture has been established in Arizona and California. The Department of Agriculture reports on its cultivation:

"The production of American-Egyptian has greatly increased owing to the decline in the production of Sea Island cotton, caused by the ravages of the boll weevil in the southeastern states. While not as fine as the best Sea Island fiber, American-Egyptian of the Pima variety is fully equal to most of the Sea Island crop in the length of staple and in average breaking strength. It seems to be a satisfactory substitute in making the classes of goods for which Sea Island was formerly used. The increase in the manufacture of automobile tires and the difficulties in the importation of Egyptian cotton, point to a strong demand for American-Egyptian and a corresponding increase in production."

During the calendar year 1918 about 80,000 acres of irrigated land in Arizona and California were planted with this cotton and the crop amounted to about 40,000 bales of 500 pounds which was sold at an average price of 56 cents a pound. At least 80 per cent of this was Pima, which has an average length of staple of from 1⅝ to 1¾ inches. The acreage planted in 1919 is about 90,000 acres, nearly all located in the Salt River Valley, Arizona, and almost all of it is Pima.

LONG-STAPLE UPLAND COTTON.

The long-staple upland cotton was formerly grown only in the Mississippi delta. The increased demand has caused successful attempts to be made to grow it in other parts of the cotton belt. In 1918 there were grown 1,359,000 bales of upland cotton, 1⅛ inches or more, as compared with 1,354,000 bales in 1917, 1,009,000 bales in 1916, and 832,000 bales in 1915. The increase in long-staple production is due, first, to the high prices paid for it in recent years, and second, to improved varieties, which, on the right soil, are showing themselves equal in yield and in early maturity to the short-staple cotton. It was found that 1.5 per cent of the crop was over 1¼ inches in length, the percentage in Mississippi being 5.4. The yield per acre is put at 190 pounds of lint above 1¼ inches in length, and 182 pounds from 1⅛ to 1¼ inches, compared to the 157.5 pounds of short-staple under 1⅛ inches. The long-staple varieties are grown only on better soil and by farmers who give their crops special attention. The states which produced the most long-staple upland cotton in 1918 were Mississippi, Arkansas, Texas, and South Carolina.

CANADIAN NOTES.

The Ames-Holden Rubber Boot Co., Limited, the new subsidiary of the Ames-Holden-McCready System, Montreal, Quebec, will locate its factory at Kitchener, Ontario, where it has acquired the Orphanage property at the corner of King and Wilmot streets and adjoining land, opposite the plant of the Ames-Holden Tire Co., Limited. T. H. Rieder is president of the new concern.

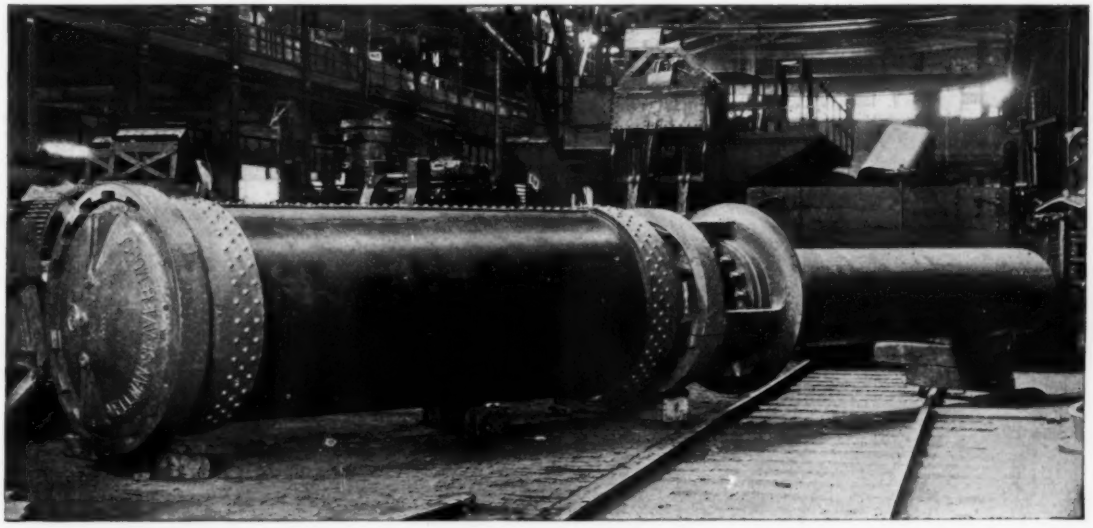
The B. F. Goodrich Co. of Canada, Limited, has opened a new branch at 44 Princess street, Winnipeg, Manitoba, and another at Dewdney avenue and Angus street, Regina, Saskatchewan.

K. & S. Tire & Rubber Goods, Limited, Weston, Ontario, will locate its new plant on Paton road, Toronto, Ontario. New machinery of the latest type will be used, especially in the rubber sundries department where production is especially desired to meet the increasing demand. The company also expects to build a new structure at an early date, in addition to those already acquired in Toronto.

The Dunlop Tire & Rubber Goods Co., Limited, has obtained a permit to build a $15,000 brick factory at the corner of Queen street and Booth avenue, Toronto.

At the Shoe, Leather and Allied Trades Fair, to be held in Montreal July 13-17, 1920, the following rubber companies and concerns in allied lines have secured booths: Ames-Holden-McCready, Limited, Montreal; Canadian Consolidated Rubber Co., Limited, Montreal; Columbus Rubber Co., Limited, Montreal; Goodyear Tire & Rubber Co., Limited, Montreal; Scholl Manufacturing Co., Toronto; and the United Shoe Machinery Co. of Canada, Montreal.

R. W. Ashcroft, director of publicity for the Ames-Holden-McCready System, has been elected president of the Montreal Publicity Association for the ensuing year.



The W-S-M Hydraulic Press Vulcanizers

The Wellman-Seaver-Morgan Company offers prompt delivery on Hydraulic Press Vulcanizers.

These Vulcanizers are built in all sizes—from the ones used in curing the smallest pneumatic casing to those used for the largest solid or cord pneumatic tires for motor trucks. Cylinders can be supplied for any hydraulic pressures and shells for any steam pressure within practical limits.

The Wellman-Seaver-Morgan Company is especially well equipped for manufacturing this class of machinery, as it has its own pattern shops, steel and iron foundries, boiler, structural and machine shops—each of which is equipped with modern machinery for efficiently handling its part of the work. There is a decided advantage in having all parts of a vulcanizer built by one manufacturer.

The Wellman-Seaver-Morgan Company manufactures a complete line of rubber machinery. Bulletins or engineering data concerning this equipment will be sent on request.

The Wellman-Seaver-Morgan Co.
CLEVELAND, OHIO

Manufactured and sold in Canada by
Canadian Ingersoll-Rand Co., Limited
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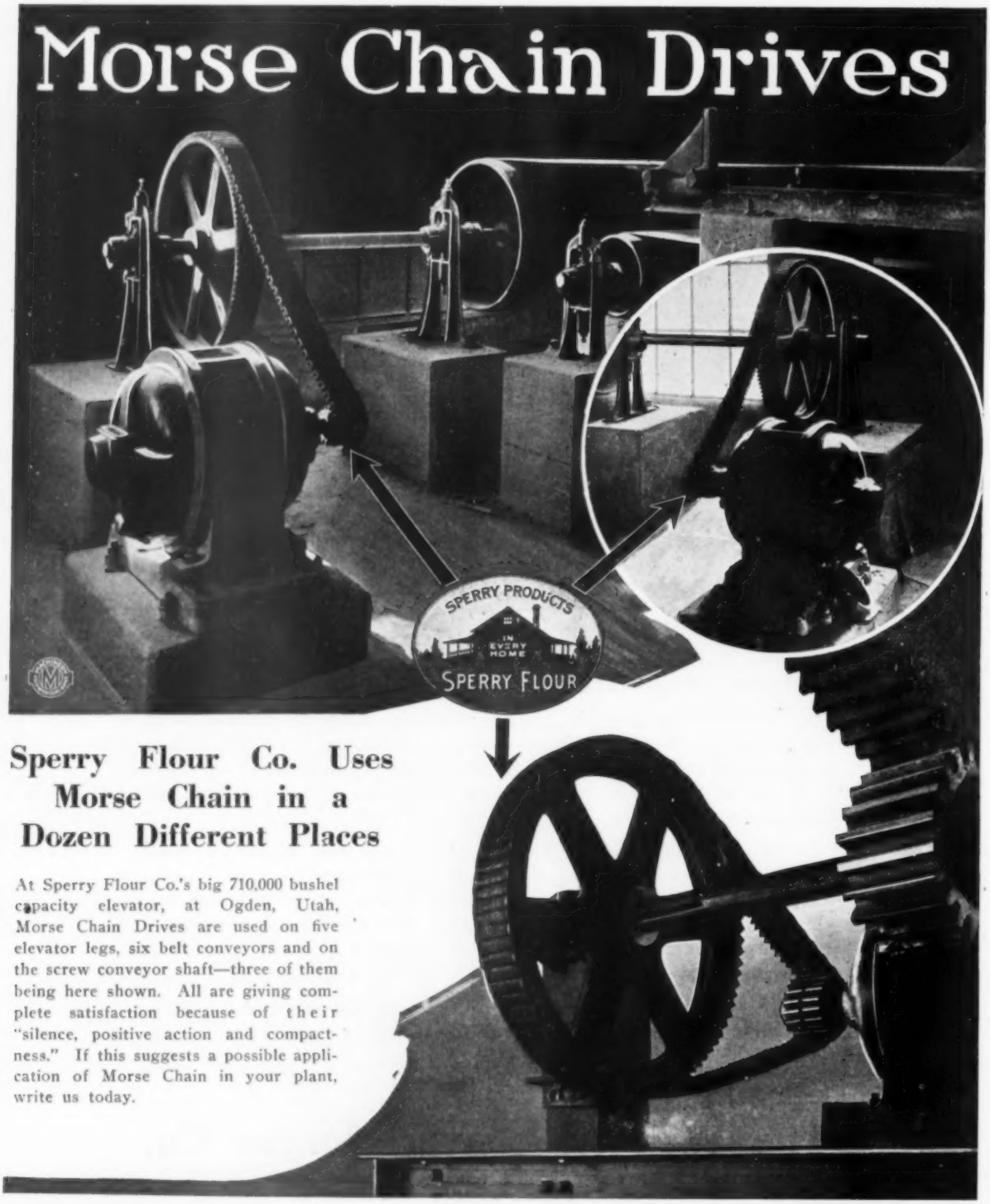
MONTREAL

Morse Chain Drives



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At Sperry Flour Co.'s big 710,000 bushel capacity elevator, at Ogden, Utah, Morse Chain Drives are used on five elevator legs, six belt conveyors and on the screw conveyor shaft—three of them being here shown. All are giving complete satisfaction because of their "silence, positive action and compactness." If this suggests a possible application of Morse Chain in your plant, write us today.

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ST. LOUIS, MO., Chemical Bldg. . . . . Morse Engineering Co.

"Morse" is the Guarantee Always Behind the Efficiency, Durability and Service

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED MAY 11, 1920.

NO. 1,339,472. Rubber tire filler with flexible metal cable in center. M. W. Needham, Waco, Tex.
1,339,516. Pneumatic tire. Burton A. Karr, Los Angeles, Calif.
1,339,570. Car for airships having pneumatic buffer bag inclosed within waterproof covering to provide watertight compartment around the lower side of said buffer bag. J. McKechnie, Barrow-in-Furness, assignor to Vickers, Limited, Westminster, London—both in England.
1,339,599. Rubber and fiber gasket. G. S. Garren, Oak Park, assignor to Sargent Company, Chicago—both in Ill.
1,339,602. Child's waterproof diaper. E. D. Marsh, Watervliet, N. Y.
1,339,617. Inflatable life preserver. W. M. Deneau, Chicago, Ill., assignor of one-half to H. Paschen.
1,339,738. Waterproof cover pad for mattresses. J. W. Callahan and M. B. Callahan, El Paso, Tex.
1,339,782. Pneumatic tire. I. Normandy, St. Catharines, assignor by direct and mesne assignments to I. L. Leo, Toronto—both in Ontario, Canada.
1,339,868. Pneumatic tire having reserve of expansibility. L. A. Subers, Lakewood, Ohio.
1,339,875. Fabric covered spring core for tire casings. F. L. Bailey and J. H. La Grant, Wichita, Kans.
1,339,876. Resilient core for tire casings. F. L. Bailey and J. H. La Grant, Wichita, Kans.
1,339,880. Sanitary mattress with waterproofed covering. C. S. Cooper, Hondo, Calif.
1,339,948. Inner tube having a plurality of threads engaged with the tread portion of the tire. J. M. and J. A. Dirienzo, Madison, Wis.
1,339,951. Pneumatic tire. C. C. Gates, assignor to The Gates Rubber Co.—both of Denver, Col.
1,339,994. Rubber overshoe. H. Westling, Hudson, Mass.
1,340,094. Sectional rim for tire. J. W. White, assignor of one-half to W. D. Rose—both of Lewistown, Mont.

ISSUED MAY 18, 1920.

1,340,199. Demountable pneumatic tire. J. S. Williams, Philadelphia, Pa. (Original application divided.)
1,340,244. Demountable rim for tires. E. J. Osborne, assignor of one-half to A. T. Bradlee—both of Brookline, Mass.
1,340,277. Fountain pen. D. J. La France and W. P. De Witt, Somerville, assignors to De Witt La France Co., Cambridge—both in Mass.
1,340,339. Pneumatic tire formed of folded and vulcanized tubes of fabric and rubber. J. H. Hill, Wilmington, Del. (Original application divided.)
1,340,341. Reinforced rubber composition sole. H. K. Hitchcock, Pittsburgh, Pa.
1,340,351. Waterproof coat. R. A. Whall, Athol, Mass.
1,340,448. Apparatus for administering anesthetics. W. A. Johnston and A. W. Browne, Prince Bay, N. Y., and F. L. Wallace, Philadelphia, Pa., assignors to the S. S. White Dental Manufacturing Co., Philadelphia, Pa. (Original application divided.)
1,340,556. Automobile tire. M. C. Overman, New York City.
1,340,608. Removable tire protector of rubberized asbestos fabric. W. A. Helm, Traverse City, Mich.
1,340,671. Demountable rim for tires. J. S. Pierce, Dunkirk, N. Y.
1,340,702. Inner tube and method of manufacture. H. Dech, assignor to Mercer Tire Co.—both of Trenton, N. J.
1,340,703. Inner tube and method of manufacture. H. Dech, assignor to Mercer Tire Co.—both of Trenton, N. J.
1,340,704. Inner tube and method of manufacture. H. Dech, assignor to Mercer Tire Co.—both of Trenton, N. J.
1,340,828. Irrigator shut-off. E. Heap, Detroit, Mich.

ISSUED MAY 25, 1920.

1,340,926. Stylographic fountain pen. C. Weitz, New York City.
1,340,973. Rubber tire vulcanizer. C. Nordstrom, Milwaukee, Wis.
1,340,977. Demountable rim for tires. H. J Parker, San Francisco, Calif., assignor by direct and mesne assignments to Parker Collapsible Rim Corporation, Chicago, Ill.
1,340,984. Solid tire. W. H. Robinson, assignor of one-half to E. Kendall—both of Brooklyn, N. Y.
1,341,000. Demountable rim for tires. L. P. Woodbury, Berkeley, Calif., assignor to Parker Collapsible Rim Corp., Chicago, Ill.
1,341,157. Water bag for filling automobile radiators. B. T. Sublett, assignor of one-half to H. L. Sublett—both in Danville, Va.
1,341,345. Emergency tire. H. M. Shannon, assignor of one-half to O. Nentwig—both of Richmond, Tex.
1,341,380. Pneumatic tire. Y. Meyer, Birmingham, Ala., assignor of one-half to W. Amott, Salt Lake City, Utah.
1,341,383. Rubber heel. G. F. Quinn, Revere, Mass.
1,341,387. Attachable heel. G. Schrade, New York City.
1,341,407. Pneumatic shock absorber for vehicles. W. N. Amory, New York City.
1,341,451. Rubber glove. J. B. Abler, Guelph, Ontario, Canada.
1,341,529. Buoyant collapsible belt. R. M. Watts, Rock Island, Ill.

ISSUED JUNE 1, 1920.

1,341,656. Tire filler. W. H. McGowen, Vincennes, Ind.
1,341,663. Tire casing. D. C. Neal, assignor to Morgan & Wright—both of Detroit, Mich.
1,341,673. Clutch facing of sponge rubber. D. Repony, assignor to The Manhattan Rubber Manufacturing Co.—both of Passaic, N. J.
1,341,752. Life-saving device. F. Lavryk, Chicago, Ill.
1,341,782. Binder for book or pad, being flexible and elastic and containing rubber, to permit insertion or removal of some leaves without injuring binding of others. S. E. Brick, Salina, Kans.
1,341,850. Fountain pen. H. W. Haslup, Toledo, Ohio.
1,341,858. Elastic band hat-pin attachment. J. B. Maserang, Belleville, Ill.
1,341,926. Split demountable rim for tires. E. Oliver, Daytona, Fla.
1,341,936. Multiple compartment inner tube for automobile and other tires. J. N. Shafer, Denver, Colo.
1,341,987. Laminated tape fabric. W. Kline, Mogadore, Ohio.
1,342,118. Demountable rim for tires. W. S. Krause, North La Junta, Colo.
1,342,158. Resilient tire. V. L. Buchman, Millers, Md.
1,342,252. Water bag. D. A. Climes, San Diego, Calif.
1,342,271. Resilient wheel with pneumatic tire around hub. H. C. Anderson, New York City.
1,342,291. Protected pneumatic heel. W. E. Kay, Elyria, Ohio.
1,342,297. Two chambered inner tube. R. L. Prudhomme, Natchitoches, La.

THE DOMINION OF CANADA.

ISSUED MAY 4, 1920.

199,705. Pneumatic tire combined with an outer auxiliary tire. C. F. F. Allan, Sydney, Australia.
199,725. Hose reel. C. J. Bradshaw, Welland, Ontario, Canada.
199,739. Hose supporter. W. W. Colson, Jacksonville, Florida, U. S. A.
199,744. Elastic tire. Amend D. Daigre, Levallois-Perret, Seine, France.
199,758. Tire valve and low air pressure signal. D. D. Getman, White Butte, South Dakota, U. S. A.
199,760. Tire valve. S. C. Hackley, Los Angeles, Calif.
199,761. Tire fabric. A. H. Gruber, Monticello, Iowa, U. S. A.
199,828. Tire valve and low air pressure. F. H. Valiton, Deer Lodge, Montana, U. S. A.
199,855. Pneumatic cushion. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of E. S. Sylvester, New Rochelle, N. Y., U. S. A.
199,883. Bloomers with elastic waistband. The Vanity Fair Silk Mills, assignee of H. J. Winsten—both of Reading, Pa., U. S. A.

ISSUED MAY 11, 1920.

199,910. Spring tire. C. Jorgensen and G. A. Dunmore, co-inventors—both of Montreal, Quebec, Canada.
199,998. Garter for knickerbockers. V. L. Munro, Chicago, Ill., U. S. A.

ISSUED MAY 18, 1920.

200,157. Surf mattress. H. B. Marshall, Long Beach, Calif., U. S. A.
200,180. Inflatable, floating equipment for soldiers, etc. C. R. Swanson, Marshall, Minn., U. S. A.
200,215. Life-preserving suit. B. C. Teeters, Ballclub, Minn., U. S. A.

ISSUED MAY 25, 1920.

200,249. Rubber band stamp. E. S. Burroughs, Liverpool, England.
200,287. Shoulder and body brace with elastic straps. W. D. Hardy, New York City, U. S. A.
800,292. Protective inner rim for pneumatic tires. B. Hirsch, Leominster Mass., U. S. A.
200,373. Collapsible demountable rim for tires. E. W. Wulff, Toledo, Ohio, U. S. A.
200,435. Clutch facing. The Raybestos Co., assignee of S. Simpson—both of Bridgeport, Conn., U. S. A.
200,450. Resilient shoe with rubber sole and heel. G. Benzinger, assignee of a third interest of G. J. Winter and C. S. Diebolt—all of Buffalo, N. Y., U. S. A.

THE UNITED KINGDOM.

ISSUED MAY 5, 1920.

139,649. Pneumatic tire. D. Glen, Ingledene, Lawson's Road, Thornton-le-Fylde, Lancashire.
139,667. Waterproof garment with rubberized fabric applied to shoulders, chest, and arms. L. Avorio, Via Pompeo Magno, Rome.
139,733. Brush with squilgee section applied on back. A. Hall, 12 Coniston street, Belfast, Ireland.
139,743. Pneumatic tire with laminated spring core. J. A. Prince and A. L. Gilles, 16 Rue d'Angleterre, Nice, France.
139,863. Reinforced pneumatic tire. J. A. Prince and A. L. Gilles, 16 Rue d'Angleterre, Nice, France.
139,874. Boot heel with facing plate of vulcanized rubber. H. A. Kraft-Rolant, 161 Gloucester street, Ottawa, Canada.
139,905. Sole and heel protectors of rubber, etc., reinforced by metal pegs. W. Connor, 32 Lower Combe street, Croydon, Surrey.
139,914. Soft rubber rectal appliance. E. W. Cooper, 100 Holyhead Road, Coventry.
139,923. Hair slide with rubber sleeve. J. P. Wagner and J. E. Brandon, 54 Aldermanbury, London.
139,924. Rubber-covered foot-rests for motorcycles. G. Addy, Stoney Stanton Road, Coventry.
139,930. Pneumatic cord tire. E. B. Killen, 27 Queen Victoria street, London.
139,936. Artificial foot with rubber block in ankle joint. H. Yearsley, 25 Stockton street, Moss Side, Manchester.
139,953. Rims for solid tires, provided with wires to increase adhesion between tire body and foundation band. T. W. Arnall, 67 Stanmore Road, Birmingham.
140,031. Dust cap for tire valve. A. Schrader's Son, Inc., 783 Atlantic avenue, Brooklyn, N. Y., assignee of H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J.—both in U. S. A.

ISSUED MAY 12, 1920.

140,118. Petrol tanks for aircraft, provided with a covering consisting of a layer of raw rubber enclosed between sheets of fabric impregnated with rubber solution, the covering being vulcanized after application. Dunlop Rubber Co., 14 Regent street, London.

Chemical Patents will be found on page 656. Machinery Patents on page 659.

140,119. The covering for petrol tanks for aircraft, described in specification No. 140,118, modified by substituting vulcanized rubber sheets for those of rubbered cloth. Dunlop Rubber Co., 14 Regent street, London.
140,120. Fuel tanks having self-sealing walls, lined with balata, gutta percha, etc. Dunlop Rubber Co., 14 Regent street, London.
140,148. Demountable rim for tires. Grimston Tyres, Limited, and J. Cooper, St. Albans, Herfordshire.
140,199. Self-filling fountain pen. W. J. Crowe, Granville Canadian Special Hospital, and J. W. Smith, 20 Victoria Park—both in Buxton, Derbyshire.
140,202. Catamenial appliance with outer casing of rubber. E. I. M. Gayfer, 19 Green street, Charing Cross Road, London.
140,214. Shaving brush, provided in center of bristles with a vacuum cup or massaging device of rubber, etc. W. M. Hoskins, Carnethy, Elmdon Road, Acocks Green, Birmingham.
140,240. Sock suspenders. Sir S. Faire and Faire Bros. & Co., Rutland street, Leicester. (Refers to specification No. 110,741.)
140,246. Hollow metal stud with vulcanite covered head, for holding a soft rubber suction disk in place on a denture. H. M. Parsons, 46 Follywell street, Blackburn.
140,248. Valve for pneumatic tire. North British Rubber Co., Castle Mills, and C. Hubbard, 46 Viewforth Terrace—both in Edinburgh.
140,269. Spring wheel with rubber tread vulcanized to continuous outer rigid ring and having pneumatic tire within. A. E. Jennings, Owensboro, Kentucky, U. S. A.
140,302. Rubber soles for shoes, etc., provided with non-skid projections arranged so as not to form a defined pattern. J. J. Hartopp, Rutland street, Leicester.
140,316. Surgical douching apparatus. F. R. Arnett, 2046 North Fifth street, Philadelphia, U. S. A.
140,337. Construction of externally applied patches as protectors for shoe soles, etc. H. C. Ridout, 28 The Triangle, Bournemouth, Hampshire.
140,338. Jacket and cover for tire with rim enclosing air tube. J. Jack, Lilyvale, Copland Road, Govan, Glasgow.

ISSUED MAY 19, 1920.

140,501. Detachable rim for tires on disk wheels. Dunlop Rubber Co., 14 Regent street, Westminster, and C. Macbeth, Para Mills, Aston Cross, Birmingham. (Refers to specification No. 121,757.)
140,502. Detachable rim for tires on disk wheels. Dunlop Rubber Co., 14 Regent street, Westminster, and C. Macbeth, Para Mills, Aston Cross, Birmingham. (Refers to specification No. 121,757.)
140,564. Windshield of vehicle window cleaner. W. Faint, 7 Waterloo street, Birmingham.
140,583. Gutta percha printing blanket. G. Ruthven, Maitland Bank, Burnhead, Larkhall, Lanarkshire.
140,623. Double-ended inner tube with main and reserve air chambers having separate inflating valves. K. N. B. Lemming, 41 St. Pederstraede, and C. F. E. Baden, 25 Dronningens, Tvaergade—both in Copenhagen.
140,628. Puncture detectors for pneumatic tires, air cushions, etc. A. H. Browne, 55 Montagu Road, Hendon, London.
140,658. Rubber coated catgut for tennis rackets. S. G. Lewis, Greensburg, Pa., U. S. A.
140,659. Life-saving costume with inflatable tubes. E. C. R. Marks, 57 Lincoln's Inn Fields, London.
140,673. Neck tie, with lining of swansdown coated on one side with rubber solution. A. J. De La Lande, 33 Virginia street, Glasgow.

NEW ZEALAND.

ISSUED APRIL 8, 1920.

41,526. Sponge rubber cap for scalp treatment. G. Curtis, Palmerston North, N. Z.
42,960. Douche nozzle. Dilater Syringe Foreign Rights Corporation, 42 Broadway, New York City, assignee of J. Rose, 729 Halsey street, Brooklyn—both in New York, U. S. A.

ISSUED APRIL 22, 1920.

42,768. Auxiliary pneumatic or solid rubber tire traveling around same axis as primary pneumatic, to provide auxiliary rolling surface if primary pneumatic becomes accidentally deflated, and also to guard against crushing latter. O. Englebert, Fils & Co., 3-11 rue des Vennes, Liége, Belgium.

GERMANY.

PATENTS ISSUED, WITH DATES OF APPLICATION.

322,469. (May 28, 1919.) Resilient tire. August Sebold, Fürstenwalde.
322,837. (December 27, 1914.) Nursing nipple. Carl Cade, Berlin.
323,275. (May 9, 1919.) Resilient wheel. Friedrich Bussmann, Berlin-Pankow.
323,394. (September 25, 1918.) Resilient tire. Max Greiner, Charlottenburg.

THE FRENCH REPUBLIC.

PATENTS ISSUED, WITH DATES OF APPLICATION.

502,610. (August 13, 1919.) Elastic tire. Demontible Spring Tire Co.
502,684. (December 28, 1916.) Improvements in resilient tires. A. Delille-Daigre.
502,685. (April 21, 1917.) Resilient wheel that does away with need of springs for body. J. Tavel, Vaulnavay le Haut (Isère.)
502,829. (August 19, 1919.) Improvements in pneumatic tire treads. S. Midzishums.
502,855. (August 1, 1919.) Automobile tire in sections, with constant resilience. J. Bulloz, Annecy, (Haute Savoie).
503,029. (August 25, 1919.) Auxiliary, detachable, casing for pneumatic tires. G. A. Collet.
503,138. (August 27, 1919.) Improvements in fabrics used for making balloons and dirigibles. The North British Rubber Co.

TRADE MARKS.

THE UNITED STATES.

NO. 114,432. The words COUNCIL OAK above representation of an acorn in white on a black triangle surrounded on the sides by three interlinked links—rubber and rubber and fabric tires and tubes. R. B. Piper, Sioux City, Ia.
115,140. The word PROTEXALL superimposed upon a double-outlined circle bearing the words MOTOR FABRICS—waterproof automobile top and curtain material, etc. The W. J. Donnelly Co., Detroit, Mich.
116,005. The word NUFASHOND—woven and braided elastics, garters, armbands, etc. The Narrow Fabric Co., Wyomissing borough, near Reading, Pa.
117,657. Representation of a violet above the word VIOLET—elastic webs. Faire Bros. & Co., Limited, Leicester, England.
117,659. Representation of snowdrops and the words THE SNOWDROP—elastic webs. Faire Bros. & Co., Limited, Leicester, England.
118,389. Representation of airplane propeller, superimposed upon double-outlined circle—toy airplanes. Lawrence Airplane Model and Supply Co., Chicago, Ill. (See THE INDIA RUBBER WORLD, October 1, 1919, page 30.)
121,788. The words PORCUPINE BOOT on a scroll above representation of a porcupine—tire patches and inner liners. E. M. Steel, assignor to Porcupine Manufacturing Co.—both of Spokane, Wash.
123,617. The word WEDGE—rubber erasers. Joseph Dixon Crucible Co., Jersey City, N. J.
124,922. The word WALRUS—arctics. United States Rubber Co., New Brunswick, N. J., and New York City.
126,571. The words GIANT MATCH—billiard cushions. The B. F. Goodrich Co., New York City.
126,587. The word AUTOCRAT—rubber or rubber and fabric tires and tubes. McClaren Rubber Co., Charlottee, N. C.
127,159. A circle enclosing the words THE E. Z. MEN'S GARTER—garters. The Thos. P. Taylor Co., Bridgeport, Conn.
127,990. The letter A within outline of a spade spot—hard rubber pipe bits and cigar and cigarette holders. American Hard Rubber Co., Hempstead and New York, N. Y.
128,189. A seal bearing representation of Hermes and the words WISCO ATHLETIC SHOES—athletic shoes made of leather, rubber, and fabric in the various combinations of those materials. Wisconsin Shoe Co., Milwaukee, Wis.
128,428. The word ERCO—tank balls. Essex Rubber Co., Trenton, N. J.
128,446. The word SNOOKUMS—boots, shoes, slippers and sandals made of leather rubber, fabric and combinations of the same. J. H. Kelleher, Randolph, Mass.
128,602. The words MAN-HEIL—inhalers. Frederick Heilman Co., Johnstown, Pa. (See THE INDIA RUBBER WORLD, January 1, 1920, page 224.)
128,848. The word HEATHER—rubber heels. The Lorain Rubber Heel Co., Lorain, O.
129,168. The word KUMFIT—aprons. Brooklyn Shield and Rubber Co., Brooklyn, N. Y.
129,789. The word VICTORY—composition heels, soles and taps. The Marathon Tire & Rubber Co., Cuyahoga Falls, O.

THE UNITED KINGDOM.

393,554. The word SASHENA—rubber sheets, sanitary bandages and belts, included in Class No. 11. T. J. Smith & Nephew, Limited, 5 Neptune street, Hull.
395,156. Conventionalized representation of a roll of belting bearing the words DICK'S ORIGINAL BALATA, GUTTA PERCHA & CANVAS BELTING and the words TRADE MARK—balata, gutta percha and canvas belting. R. & J. Dick, Limited, 23 McPhail street, Greenhead, Glasgow.
395,292. The word AVORA within conventionalized sunburst as background for point of fountain pen in vertical position—fountain pens, erasers, etc. I. Levi, 9 Via Bascilica, Turin, Italy. (Care of Herbert Haddan & Co., 31-32 Bedford street, Strand, London, W. C. 2.)
395,772. The word GIANT within an oval—rag and rubber cutting machines. Taylor, Stiles & Co., Riegelsville, N. J., U. S. A. (Care of R. J. Marx, 133-139 Finsbury street, London, E. C. 2.)
395,958. Representation of a label bearing the words and letters L. P. L. PEPTOMINT GUM within a circle and diagonal polygon—chewing gum. L. P. Larson, Jr., Co., 201 East Ohio street, Chicago, Ill., U. S. A. (Care of Heron Rogers & Dehn, Bridge House, 181 Queen Victoria street, London, E. C. 4.)
396,184. Representation of a pyramid surmounted by a tire, accompanied by the words APEX RUBBER CO., TRADE MARK, all within a double-outlined circle—all goods included in Class No. 40. A. J. Milne-Smith, trading as The Apex Rubber Co., Laurel Cottage, Fox Hill, Upper Norwood, London, S. E. 19.)
400,005. The words "ODDS ON" quoted—all goods included in Class No. 40. The "Odds On" Specifics Co., Limited, 36-37 Cock Lane, Snow Hill, London, E. C. 1.
400,009. The words "ODDS ON" quoted—all goods included in Class No. 49. The "Odds On" Specifics Co., Limited, 36-37 Cock Lane, Snow Hill, London, E. C. 1.
400,645. The word POPULAR in white letters within a modified black rectangle behind a seal bearing the representation of a pair of balances and the words NORTH BRITISH RUBBER CO., LIMITED, EDINBURGH. The North British Rubber Co., Limited, Castle Mills, Fountainbridge, Edinburgh, Scotland.
400,910. The word ROVER—footballs. John Douglas, Son & Co., Trindle Works, Trindle Road, Dudley, Worcestershire.
401,109. The word WOEMI—asbestos packing, jointing, and washers, and rubber hose. E. J. Little, trading as The West of England Motor Industries, Monmouth Place, Upper Bristol Road, Bath Somerset.
401,338. The word KELVINETTE—goods manufactured from india rubber or gutta percha, not included in classes other than No. 40. Sloan-Munro & Co., Limited, 11-19 Queen street, Glasgow.

401,745. The word GOODYEAR divided by representation of a winged foot—goods manufactured from rubber and gutta percha, not included in classes other than No. 40. The Goodyear Tire & Rubber Co., Akron, O., U. S. A. (Care of Marks & Clark, 57-58 Lincoln's Inn Fields, London, W. C. 2.)

401,928. The word VULZENE—vulcanizing compounds. Harvey Frost & Co., Limited, 148-150 Great Portland street, London, W. 1.

401,929. The word TREDZENE—vulcanizing compounds. Harvey Frost & Co., Limited, 148-150 Great Portland street, London, W. 1.

401,930. The word REDZENE—vulcanizing compounds. Harvey Frost & Co., Limited, 148-150 Great Portland street, London, W. 1.

THE DOMINION OF CANADA.

26,342. The word VAC—golf balls. The Dunlop Rubber Co., Limited, Dunlop House, 1 Albany street, Regent's Park, London, N. W. 1, England.

26,447. The word EVERGREEN on a shield above representation of an evergreen tree—inner tubes for automobile and bicycle tires. Chipman (Canada) Limited, Montreal, Que.

26,493. The letter C surrounding the letter X and V-shaped devices—rubber boots and shoes and tires and tubes. Converse Rubber Shoe Co., Malden, Mass., U. S. A.

26,518. The word MAJESTIC—tires and tubes. Majestic Tire & Rubber Co., Indianapolis, Ind., U. S. A.

THE FRENCH REPUBLIC.
TO AMERICANS.

187,015. The word GOODRICH—pneumatic or solid tires, belting, and all rubber articles. Société Française B. F. Goodrich, Colombes, France.

27,297. The letter G within laurel wreath, between two diamond shapes—rubber tires of all kinds and all rubber goods. The B. F. Goodrich Co., 1780 Broadway, New York City, U. S. A.

27,888. The words ADAMS KIS-ME—chewing gum, etc. The American Chicle Co., New Jersey, U. S. A.

27,890. The words ADAMS SEN SEN, with picture of ribbon—chewing gum, etc. The American Chicle Co., New Jersey, U. S. A.

27,892. The words ADAMS YUCATAN—chewing gum, etc. The American Chicle Co., New Jersey, U. S. A.

23,893. The words BEEMAN'S PEPSIN CHEWING GUM around portrait—chewing gum, etc. The American Chicle Co., New Jersey, U. S. A.

27,958. The representation of a seal bearing the words UNITED STATES RUBBER COMPANY AND ASSOCIATED COMPANIES on edge and the words U S RUBBER SYSTEM in the center—all kinds of rubber articles. United States Rubber Co., New Brunswick, N. J., U. S. A.

27,994. The letters A-W within a diamond—apparatus for repairing belting or pneumatic tires, and all utensils, accessories, and needed detached parts. The Williams Foundry & Machine Co., Akron, O., U. S. A.

28,018. The word ECONOMY in a border—clogs of rubber, rubber composition, and fiber for boots and shoes. Emery Heel Sales Co., Boston, Mass., U. S. A.

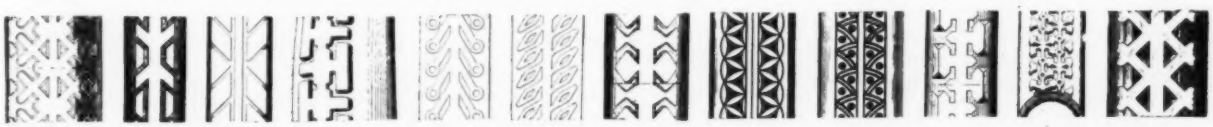
28,026. The word SARCO in white letters on a black diamond—insulating material of all kinds, including rubber. Standard Asphalt & Refining Co., Chicago, Ill., U. S. A.

28,220. The word MASON within an oval, with a flourish—pneumatic, hollow, or solid tires, tubes, and casings. The Mason Tire & Rubber Co., Kent, O., U. S. A.

DESIGNS.
THE UNITED STATES.

NO. 55,114. Rubber sole pad. Patented May 11, 1920. Term 14 years. J. E. Barney, New York City, assignor to Pioneer Products, Inc., Malone—both in New York. (See THE INDIA RUBBER WORLD, April 1, 1920, page 434.)

55,118 55,119 55,141 55,144 55,146 55,147 55,216 55,236 55,287 55,313 55,314 55,315 55,332



55,122 55,132 55,140 55,142 55,239 55,240 55,190 55,301 55,302 55,364 55,378 55,171

55,115. Rubber sole pad. Patented May 11, 1920. Term 14 years. J. E. Barney, New York City, assignor to Pioneer Products, Inc., Malone—both in New York. (See THE INDIA RUBBER WORLD, April 1, 1920, page 434.)

55,116. Rubber heel pad. Patented May 11, 1920. Term 14 years. J. E. Barney, New York City, assignor to Pioneer Products, Inc., Malone—both in New York. (See THE INDIA RUBBER WORLD, April 1, 1920, page 434.)

55,118. Non-skid tire. Patented May 11, 1920. Term 14 years. W. E. Dursten, New Castle, Pa. (See THE INDIA RUBBER WORLD, March 1, 1920, page 365.)

55,119. Non-skid tire. Patented May 11, 1920. Term 14 years. W. E. Duersten, New Castle, Pa.

55,122. Tire. Patented May 11, 1920. Term 7 years. J. B. Gabeline, Burlington, assignor to Standard Four Tire Co., Keokuk—both in Iowa.

55,127. Rubber heel. Patented May 11, 1920. Term 14 years. H. Hess, Baltimore, Md.

55,132. Tire. Patented May 11, 1920. Term 14 years. E. J. Kraft, Racine, Wis., assignor to Ajax Rubber Co., Inc., New York City.

55,135. Balloon valve. Patented May 11, 1920. Term 14 years. J. S. Maxwell, Richmond, Ind.

55,140. Tire. Patented May 11, 1920. Term 14 years. W. Seabridge, assignor to Empire Tire & Rubber Corporation—both of Trenton, N. J.

55,141. Tire. Patented May 11, 1920. Term 14 years. E. O. Sterns, Columbus, assignor to The Rotary Tire & Rubber Co., Zanesville—both in Ohio.

55,142. Tire. Patented May 11, 1920. Term 14 years. E. A. Tinsman, assignor to the Standard Tire Co.—both of Willoughby, O.

55,144. Tire. Patented May 18, 1920. Term 14 years. M. L. A. A. Allard, Akron, O., assignor to The Overland Tire & Rubber Co., Omaha, Neb.

55,146. Tire. Patented May 18, 1920. Term 7 years. A. L. Breitenstein, Akron, assignor to The Ashland Tire & Rubber Co., Ashland—both in Ohio.

55,147. Tire. Patented May 18, 1920. Term 7 years. A. L. Breitenstein, Akron, assignor to The Ashland Tire & Rubber Co., Ashland—both in Ohio.

55,158. Rubber heel. Patented May 18, 1920. Term 7 years. W. E. Durham, assignor to The Emory Rubber Sole Co., Inc.—both of Norfolk, Va.

55,171. Tire. Patented May 18, 1920. Term 14 years. J. L. Hanley, Chicago, Ill.

55,190. Tire. Patented May 18, 1920. Term 14 years. G. C. McConnell, assignor to Fidelity Tire & Rubber Co.—both of Massillon, O.

55,216. Tire. Patented May 18, 1920. Term 14 years. J. Tenney, Jr., Plainfield, N. J., assignor to Howe Rubber Corporation, a Delaware corporation.

55,236. Tire. Patented May 25, 1920. Term 7 years. G. E. Bennie, Nashville, Tenn.

55,239. Tire. Patented May 25, 1920. Term 7 years. A. L. Breitenstein, Akron, assignor to The Ashland Tire & Rubber Co., Cleveland—both in Ohio.

55,240. Tire. Patented May 25, 1920. Term 7 years. A. L. Breitenstein, Akron, assignor to The Ashland Tire & Rubber Co., Cleveland—both in Ohio.

55,287. Tire. Patented May 25, 1920. Term 14 years. E. L. Lawlor, Youngstown, O.

55,301. Tire. Patented May 25, 1920. Term 7 years. J. J. Novak, Omaha, Neb.

55,302. Tire. Patented May 25, 1920. Term 7 years. J. J. Novak, Omaha, Neb.

55,313. Tire. Patented May 25, 1920. Term 14 years. W. C. Owen, Cleveland, O.

55,314. Tire. Patented May 25, 1920. Term 14 years. W. C. Owen, Cleveland, O.

55,315. Tire. Patented May 25, 1920. Term 14 years. W. C. Owen, Cleveland, O.

55,318. Shoe sole. Patented May 25, 1920. Term 7 years. E. Phillips, Cleveland, O.

55,330. Golf ball. Patented May 25, 1920. Term 7 years. J. C. Robertson, Glasgow, Scotland.

55,332. Tire. Patented May 25, 1920. Term 3½ years. G. N. Schell, Cleveland, O.

55,343. Cushion sole pad. Patented May 25, 1920. Term 3½ years. L. M. Van Wagner, and I. A. Duffy, Far Rockaway, N. Y.

55,364. Tire. Patented June 1, 1920. Term 7 years. A. L. Breitenstein, Akron, assignor to The Ashland Tire & Rubber Co., Ashland, O.

55,378. Tire. Patented June 1, 1920. Term 14 years. H. E. Grooms, Columbus, Ga.

55,393. Heel. Patented June 1, 1920. Term 14 years. W. Melville, assignor to The Melville Shoe Corporation, New York City.

55,396. Cabinet for rubber bands. F. Pfous, Coshocton, O., assignor to Eberhard Faber Pencil Co., New York City.

55,397. Sole and heel pads. Patented June 1, 1920. Term 7 years. E. Phillips, Cleveland, O.

THE DOMINION OF CANADA.

4,780. Tire. Patented May 18, 1920. Dunlop Tire and Rubber Goods Company, Limited, Toronto, Ont.

4,782. Sole pad. Patented May 18, 1920. L. S. Mitchell, Montreal, Que.

4,783. Sole pad. Patented May 18, 1920. L. S. Mitchell, Montreal, Que.

4,784. Sole pad. Patented May 18, 1920. L. S. Mitchell, Montreal, Que.

Review of the Crude Rubber Market.

NEW YORK.

WHILE there has been much speculative activity, the regular rubber market has been very dull with few sales and the lowest prices of the year. This is due in part to the general tightness of money, which makes it difficult to finance even established business. The inability to procure credits has prevented dealers from taking advantage of the low prices in the East and securing stocks in anticipation of future rises. The continued difficulties of railroad transportation have interfered with manufacturers' receiving raw materials and delivering products, which has kept rubber prices down. An additional temporary cause for this has been the large proportion of moldy rubber found in some invoices. Manufacturers are holding back mainly because their stocks are sufficient for their needs under the present hampering conditions and also in the expectation that prices will be still lower.

Forecasts in the tire-building trade have been confused somewhat by the troubles of the fabric makers with transportation and with labor, and also by the long-continued bad weather this spring, which interfered with the use of automobiles and consequently with the anticipated demand for new tires.

Prices for plantation and South American rubber at the beginning and toward the end of the month are shown in the following quotations:

PLANTATIONS. June 1, first latex crêpe, spot, 39 cents; July-September, 39½ cents; October-December, 43-43½ cents; January-June, 45 cents.

June 25, spot 38-38½ cents; July-September, 40¼ cents; October-December, 43½ cents; January-March, 45 cents; January-June, 46 cents.

June 1, ribbed smoked sheets, spot 38½ cents; July-September, 39½ cents; October-December, 43-43½ cents; January-June, 44½-45 cents.

June 25, spot, 37¼-38 cents; July-September, 39½ cents; October-December, 43 cents; January-March, 43¾ cents; January-June, 44¾ cents.

June 1, No. 1 amber crêpe, spot, 38 cents.

June 25, spot, 36½ cents; October-December, 32 cents.

June 1, No. 1 rolled brown crêpe, spot, 31 cents. June 25, spot, 30 cents; October-December, 32 cents.

SOUTH AMERICAN PARÁS AND CAUCHOS. June 1, spot prices, upriver fine, 39½ cents; islands fine, 40½ cents; upriver coarse, 30 cents; islands coarse, 22 cents; Cametá coarse, 22½-23 cents; caucho ball, 30¼ cents.

June 25, upriver fine, 37½ cents; islands fine, 40 cents; upriver coarse, 27 cents; islands coarse, 22 cents; Cametá coarse, 20½ cents; caucho ball, 28 cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago, and June 25, the current date:

	July 1, 1919.	June 1, 1920.	June 25, 1920.
PLANTATION HEVEA—			
First latex crêpe	$0.40 @	$0.38 @.39	$0.37¼@.38
Amber crêpe No. 1	.38 @	.38 @.38½	.36 @.36½
Amber crêpe No. 2	.37 @	.37 @.37½	.35 @.36
Amber crêpe No. 3	.36 @	.36 @.36½	.34 @.35
Amber crêpe No. 4	.35 @	.35 @	.33 @.34
Brown crêpe, thick and thin clean	.35 @	.35 @.36	.33 @.35
Brown crêpe, thin specky	.32 @	.30 @	.31 @
Brown crêpe, rolled	.29 @	.30 @.31	.30 @
Smoked sheet, ribbed, standard quality	.39 @	.38 @.38½	.37 @.37¼
Smoked sheets, plain, standard quality	.37 @	.36½@.37½	.36 @
Unsmoked sheet, standard quality	.36 @	.35 @	.33 @
Colombo scrap No. 1	.30 @	.30 @	.30 @
Colombo scrap No. 2	.28 @	.28 @	.28 @

	July 1, 1919.	June 1, 1920.	June 25, 1920.
EAST INDIAN—			
Assam crêpe	*$0.56 @	@	@
Assam onions	@	@	@
Penang block scrap	*.38 @	@	@
PONTIANAK—			
Banjermassin	.14 @	.12 @	.12½@
Palembang	@	.13 @	@
Pressed block	.25 @	.25 @	.24 @
Sarawak	@	@	@
SOUTH AMERICAN—			
PARÁS—			
Upriver fine	.55¼@.56	.39½@	.37 @.37¼
Upriver medium	.51 @	.37 @	.34 @
Upriver coarse	.34 @	.30 @	.27 @
Upriver weak, fine	.46 @	.36 @	.33 @
Islands, fine	.48 @	.40½@.41	.40 @
Islands, medium	.43 @	.38 @	.35 @
Islands, coarse	.21 @	*.22 @	.22 @
Cametá, coarse	.22½@	*.22 @	.20 @.20½
Madeira, fine	.57 @	.43 @	.40 @
Acre Bolivian, fine	.56½@	.41 @	.39 @
Peruvian fine	.54 @	.37 @	*.36½@
Tapajos fine	.53 @	.38 @	*.36 @
CAUCHO—			
Lower caucho ball	.30½@	.28 @	.27 @.28
Upper caucho ball	.48 @	.30½@.31	.29 @
MANICOBAS—			
Ceará negro heads	*.25 @	.32 @	.25 @
Ceará scrap	*.30 @	.26 @	.18 @
Manicoba, 30% guarantee	.34 @	.30 @	.24 @
Mangabeira thin sheet	.38 @	.30 @.31	.30 @
strings	@	.34 @	.34 @
Conakry niggers	@	.33 @	.33 @
Massai sheets and strings	@	.33 @	.33 @
CENTRALS—			
Corinto scrap	.35 @.37	.25 @.25	.22 @
Esmeralda sausage	.35 @	.25 @.26	.22 @
Central scrap	.34 @	.25 @.26	.21 @.22
Central scrap and strip	.32 @	.23 @.24	.19 @.20
Central wet sheet	.28 @	.18 @.19	.15 @
Guayule, 20% guarantee	.25 @	.27 @	.27 @
Guayule, washed and dried	.36 @	.37 @	.37 @
AFRICANS—			
Niger flake, prime	@	.17 @	.16 @
Benguela, extra No. 1, 28%	*.24 @	.18 @	.21 @
Benguela, No. 2, 32½%	*.26 @	.15 @	.19 @
Congo prime, black upper	.38 @	.36 @	.19 @
Congo prime, red upper	*.34 @	.20 @	@
Kassai black	@	.36 @	.35 @
red	@	.22 @	.22 @
Rio Nunez ball	@	.35 @	.35 @
Rio Nunez sheets and			
GUTTA PERCHA—			
Gutta Siak	.25 @	.29 @	.26 @
Red Macassar	3.15 @	2.60 @	2.75 @
BALATA—			
Block, Ciudad Bolivar	.75 @	.70 @	.72 @
Colombia	@	.50 @.52	.47 @
Panama	.50 @.60	.48 @	.25 @.45
Surinam sheet	1.05 @1.10	.84 @	.79 @
amber	@	.86 @	.82 @

*Nominal.

RECLAIMED RUBBER.

Reclaimers are operating their plants on full schedules and report an active demand at no advance in prices. Transportation facilities are still in bad condition and deliveries are consequently made with difficulty. The mechanical factories of the large companies are working to capacity. In tire production output has been considerably restricted except possibly in cord tires.

NEW YORK QUOTATIONS.

JUNE 25, 1920.

Prices subject to change without notice.

Standard reclaims:	
Floating	$0.30 @$0.35
Friction	.30 @ .35
Mechanical	.12½@ .13½
Red	.23 @ .24
Shoe	.15¾@ .16¼
Tires, auto	.16 @ .17
truck	.13 @ .14
White	.22 @ .25

COMPARATIVE HIGH AND LOW NEW YORK SPOT RUBBER PRICES.

	June. 1920.*	1919.	1918.
PLANTATIONS:			
First latex crêpe	$0.39 @ $0.37½	$0.44½ @ $0.35	$0.63 @ $0.60
Smoked sheet ribbed	0.39½ @ 0.37½	0.43½ @ 0.35	0.62 @ ...
PARAS:			
Upriver, fine	0.38½ @ 0.36¾	0.56½ @ 0.55½	0.68 @ ...
Upriver, coarse	0.28½ @ 0.26¾	0.34¾ @ 0.32½	0.40 @ ...
Islands, fine	0.40½ @ 0.38	0.47½ @ 0.47	0.59 @ ...
Islands, coarse	0.21 @ ...	0.22 @ .21	0.27 @ ...
Cametá	0.23 @ 0.21	0.23 @ .22	0.28 @ ...

*Figured to June 24.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 1 Liberty street, New York City, advises as follows:

"During June the demand for commercial paper has been quite limited and entirely from out-of-town banks. Early in the month the best rubber names went at 8 per cent, but during the latter part of the month the rate advanced to 8¼ to 8½ per cent; names not well known are practically neglected."

SINGAPORE RUBBER MARKET.

GUTHRIE & CO., LIMITED, Singapore, report [May 6, 1920]:

Influenced by advices of a fall in values in London and New York, the rubber market showed a pronounced weakness at the auction held yesterday and to-day. Buying was on a very limited scale, and only the best of the lots offered elicited any competition. Ribbed smoked sheet sold up to 86 cents (one lot realized 86½ cents), or 6 cents below last week's best. Only a very few lots were disposed of at this figure, the average for prime sheet being about 85 cents. Fine pale crêpe sold at up to 84½ cents (three lots sold at 85, 85½ and 86 cents, respectively), showing a drop on the week of 6½ cents.

Lower grades of crêpes shared in the general decline and sellers had to make considerable concessions to meet the market. Of 699 tons offered only 366 tons were sold.

The following is the course of values:

	In Singapore per Pound.[1]	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked	83c @ 86c	2/ 1¾ @ 2/ 2½
Sheet, good ribbed smoked	72 @ 82½	1/10⅝ @ 2/ 1½
Crêpe, fine pale	82 @ 84½	2/ 1⅞ @ 2/ 2⅝
Crêpe, good pale	74½ @ 80½	1/11¾ @ 2/ 1½
Crêpe, fine brown	70 @ 77	1/10½ @ 2/ 0½
Crêpe, good pale	54 @ 68	1/ 6 @ 1/10
Crêpe, dark	50 @ 58½	1/ 4⅞ @ 1/ 7¼
Crêpe, bark	40 @ 49½	1/ 2 @ 1/ 4¾

[1]Quoted in Straits Settlements currency: $1 = $0.567 United States currency.

ANTWERP RUBBER MARKET.

GRISAR & CO., Antwerp, report [May 28, 1920]:

The low prices reached by rubber seem to have attracted the attention of buyers and we note a better demand. After having touched the price of 1*s.* 10¾*d.*, the closing prices were: Latex crêpe, spot, 2*s.*; Pará fine, 2*s.* 1½*d.*

At the last moment great firmness with good tendency is noted.

Statistics for the week were as follows: Arrivals, 566 tons; sales, 1,170 tons; stock, 20,819 tons, against 21,799 in 1919.

Small quantities of African rubber were sold; 1,430 kilos of red Congo Wamba and 100 kilos of read Congo Kasai. Stock on hand: about 445 tons.

Owing to the violent fluctuations in exchange the futures market was very active, and transactions amounting to 440,000 kilos were made. Closing quotations, each month: May-November, 11.70 francs; December, 11.60 francs; January-April, 11.50. Tendency steady.

AMSTERDAM RUBBER MARKET.

JOOSTEN & JANSSEN, Amsterdam, report [June 4, 1920]:

The rubber market has again been very quiet during the past week; some spot business has been going on, but on the terminal market the turnover has been small. Prices were a little firmer: Standard crêpe, spot Amsterdam, rose from f. 1.20 to f. 1.27. On the terminal market f. 1.30 was bid for June crêpe, while June sheets were offered at f. 1.29; for standard sheets, August delivery, f. 1.29 has been paid. Toward the close the market was somewhat easier, as buyers withdrew their orders.

The next inscription sale on June 15 will comprise about 546,000 kilos., of which about 470,000 are fresh arrivals.

EXPORTS OF CRUDE RUBBER FROM BELAWAN (DELI), SUMATRA.

	March. 1919.	1920.	Three Months Ended March 31. 1919.	1920.
To Netherlands ..... *kilos*	.....	339,183	.....	791,468
United Kingdom	675,112	329,541	932,856	829,984
Italy	61,120	.....	61,120	.....
Belgium	.....	.....	.....	95
United States	839,464	1,080,087	1,827,724	2,979,298
Penang	26,154	106,362	69,092	215,583
Singapore	857,333	543,527	3,874,732	1,238,400
Japan	.....	.....	980	.....
Australia	148,680	.....	148,680	.....
Totals ..... *kilos*	2,607,863	2,398,700	6,915,184	6,054,828

PLANTATION RUBBER EXPORTS FROM JAVA.

	March. 1919.	1920.	Three Months Ended March 31. 1919.	1920.
To Netherlands ..... *kilos*	.....	463,000	.....	1,061,000
Great Britain	173,000	157,000	1,019,000	1,167,000
France	167,000	.....	176,000	.....
United States	1,864,000	1,397,000	5,035,000	4,674,000
Singapore	459,000	430,000	1,391,000	1,170,000
Japan	59,000	102,000	125,000	131,000
Australia	51,000	.....	117,000	.....
Other countries	.....	.....	142,000	.....
Totals	2,773,000	2,549,000	8,005,000	8,203,000
Ports of origin:				
Tandjong Priok	1,081,000	1,469,000	4,033,000	4,052,000
Samarang	133,000	17,000	156,000	150,000
Soerabaya	1,432,000	1,043,000	3,462,000	3,735,000

FEDERATED MALAY STATES RUBBER EXPORTS.

An official report from Kuala Lumpur reports that there were 8,375 tons of plantation rubber exported from the Federated Malay States in the month of April, as compared with 9,524 tons in the previous month and 7,664 tons in the corresponding month last year.

The total exports for the first four months of the present year amount to 38,799 tons as against 36,315 tons for the corresponding period in 1919 and 29,545 tons in 1918. Appended are the comparative statistics:

	1918.	1919.	1920.
January ..... *tons*	7,588	7,163	11,119
February	6,820	10,899	9,781
March	7,709	10,679	9,524
April	7,428	7,664	8,375
Totals	29,545	36,315	38,799

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official report from Singapore states that there were 15,720 tons of rubber (of which 1,264 tons were transhipments) exported from the ports of the Straits Settlements in the month of April. This compares with 5,931 tons in March and 10,848 tons in the corresponding month of last year. The total exports of rubber for the first four months of the present year amounted to 52,155 tons, compared with 61,821 tons for the similar period of last year and 22,078 tons in 1918. Appended are the comparative statistics:

	1918.	1919.	1920.
January ..... *tons*	4,302	14,404	13,125
February	2,334	15,661	17,379
March	8,858	20,908	5,931
April	6,584	10,848	15,720
Totals	22,078	61,821	52,155

CEYLON RUBBER IMPORTS AND EXPORTS.

IMPORTS.

	January 1 to April 26. 1919.	1920.
Crude rubber:		
From Straits Settlements ..... *pounds*	768,258	951,452
India	561,603	696,935
Burma and other countries	.....	6,300
Totals	1,329,861	1,654,687

EXPORTS.

Crude rubber:		
To Great Britain	11,480,555	10,699,722
Belgium	.....	18,360
France	330,010	121,710
Germany	.....	81,348
Netherlands	.....	28
Italy	.....	67,200
Australia	62,742	36,831
United States	25,844,821	11,324,536
Canada and Newfoundland	260,016	425,600
India	1,677	336
Straits Settlements	424	44,800
Japan	119,501	97,100
Totals	38,099,746	22,917,571

(Compiled by the Ceylon Chamber of Commerce.)

ANTWERP RUBBER ARRIVALS.

APRIL 21. By the S. S. *Albertville*, from the Congo.

Bungé et Cie. ..... *kilos*	1,622
Bungé et Cie. (Comptoir Colonial Belgika.)	7,320
Bungé et Cie. (Compagnie du Congo Belge.)	10,595
Bungé et Cie. (Compagnie N'Kémé-N'Kémi.)	5,620
Crédit Colonial & Commercial (Anc. L. & W. van de Velde), (Cie. du Kasai.)	145,850
Société Coloniale Anversoise (S.A.B.)	3,792
Total ..... *kilos*	174,799

(Compiled by Grisar & Co., Antwerp.)

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIPS' MANIFESTS.

PARAS AND CAUCHO AT NEW YORK.

	Fine.	Medium	Coarse.	Caucho.	Totals. Pounds.
MAY 21. By the S. S. *Virgil*, from Pará.					
Paul Bertuch	26,984	.....	10,185	38,691	75,860
Hagemeyer & Brunn	53,541	.....	13,035	31,853	98,429
Poel & Kelly	3,685	.....	10,051	.....	13,736
MAY 27. By the S. S. *Manco*, from Manáos.					
Poel & Kelly	67,831	14,264	82,209	.....	164,304
H. A. Astlett & Co.	.....	.....	.....	.....	50,568
G. Amsinck & Co., Inc.	.....	.....	.....	.....	28,028
Various	.....	.....	.....	.....	138,670
MAY 27. By the S. S. *Manco*, from Itacoatiara.					
Poel & Kelly	.....	.....	.....	.....	4,116
Various	.....	.....	.....	.....	3,822
MAY 27. By the S. S. *Manco*, from Pará.					
Poel & Kelly	.....	.....	.....	.....	9,114
Paul Bertuch	335,094	.....	.....	.....	335,094
Wm. Schall & Co.	.....	.....	.....	.....	29,498
Hagemeyer & Brunn	115,460	.....	.....	.....	115,460
JUNE 2. By the S. S. *Waaldyk*, from Pará.					
Various	.....	.....	.....	7,840	7,840
JUNE 2. By the S. S. *Korean Prince*, from Pará.					
Various	.....	.....	.....	157,091	157,091
JUNE 12. By the S. S. *Bronte*, from Pará.					
Paul Bertuch	.....	.....	14,560	159,031	173,591
Poel & Kelly	.....	.....	20,402	.....	20,402
Madeira-Mamore Ry. Co	.....	.....	.....	.....	196
Hagemeyer & Brunn	112,741	.....	19,344	2,668	134,753
JUNE 18. By the S. S. *Sallust*, from Pará.					
General Rubber Co.	.....	.....	.....	.....	6,664
Poel & Kelly	.....	.....	.....	.....	7,448
Various	.....	.....	.....	.....	302,232
JUNE 18. By the S. S. *Lake Gaither*, from Pará.					
Paul Bertuch	.....	.....	77,441	48,909	126,350
Meyer & Brown, Inc.	.....	.....	.....	49,280	49,280

PLANTATIONS.

(*Figured* 180 *pounds to the bale or case.*)

	Shipment from:	Shipped to:	Pounds.	Totals.
MAY 20. By the S. S. *Oanfa*, at New York.				
Hood Rubber Co.	Singapore	Watertown	246,500	246,500
MAY 23. By the S. S. *Nieuw Amsterdam*, at New York.				
Meyer & Brown, Inc.	Rotterdam	New York	62,720	62,720
MAY 23. By the S. S. *Clan McPhee*, at New York.				
L. Littlejohn & Co.	Colombo	New York	89,600	
Baird Rubber & Trading Co.	Singapore	New York	22,400	
The Fisk Rubber Co.	Singapore	Chicopee Falls	11,200	
J. T. Johnstone & Co., Inc.	Singapore	New York	12,320	
Vernon Metal & Produce Co.	Cochin	New York	152,280	
Fred Stern & Co.	Colombo	New York	78,200	366,000
MAY 24. By the S. S. *Intan*, at New York.				
The Fisk Rubber Co.	Singapore	Chicopee Falls	336,000	
J. T. Johnstone & Co., Inc.	Singapore	New York	46,480	
L. Littlejohn & Co., Inc.	Singapore	New York	286,000	
Aldens' Successors, Inc.	Singapore	New York	7,300	
Poel & Kelly	Singapore	New York	114,300	
L. Sutro & Co.	Singapore	New York	14,400	
Thornett & Fehr, Inc.	Singapore	New York	17,280	
The Goodyear Tire & Rubber Co.	Singapore	Akron	217,800	
Mitsui & Co., Limited	Singapore	New York	210,780	
Fred Stern & Co.	Singapore	New York	43,740	
Bolle-Watson Co., Inc.	Singapore	New York	27,180	
Various	Singapore	New York	220,320	
Fred Stern & Co.	Soerabaya	New York	58,420	
Various	Samarang	New York	11,700	
Fred Stern & Co.	Batavia	New York	60,300	
The Goodyear Tire & Rubber Co.	Batavia	Akron	113,220	
Smith & Schippers.	Batavia	Akron	42,120	
L. Littlejohn & Co., Inc.	Batavia	Akron	51,660	
E. S. Kuh & Valk Co.	Batavia	Akron	20,880	
Various	Batavia	Akron	600,560	2,500,440
MAY 24. By the S. S. *Empress of Russia*, at Vancouver.				
Firestone Tire & Rubber Co.	Singapore	Akron	405,180	405,180
MAY 24. By the S. S. *New York*, at New York.				
Various	Singapore	New York	1,655,280	1,655,280
MAY 24. By the S. S. *Palacia*, at New York.				
General Rubber Co.	London	New York	1,195,740	
The Goodyear Tire & Rubber Co.	London	Akron	339,480	
Various	London	New York	447,300	1,982,520
MAY 25. By the S. S. *Defiance*, at New York.				
Various	London	New York	720	720
MAY 26. By the S. S. *Ariosto*, at New York.				
Hood Rubber Co.	Singapore	Watertown	58,750	58,750
MAY 28. By the S. S. *St. Paul*, at New York.				
Various	London	New York	70,940	70,940
MAY 28. By the S. S. *Vandyk*, at New York.				
L. Littlejohn & Co., Inc.	Soerabaya	New York	112,000	
Chas. F. Smillie & Co.	Soerabaya	New York	41,220	
Chas. F. Smillie & Co.	Batavia	New York	25,740	
Fred Stern & Co.	Batavia	New York	201,600	
Various	Asahan	New York	7,740	
The Goodyear Tire & Rubber Co.	Belawan	Akron	90,400	
Various	Belawan	New York	75,420	
G. Amsinck & Co., Inc.	Padang	New York	13,320	
Various	Soerabaya	New York	90,000	
Various	Padang	New York	15,840	
Various	Batavia	New York	148,360	821,640
MAY 30. By the S. S. *Korea Maru*, at San Francisco.				
Firestone Tire & Rubber Co.	Penang	Akron	266,400	266,400
MAY 30. By the S. S. *Rotterdam*, at New York.				
Fred Stern & Co.	Rotterdam	New York	55,624	
L. Littlejohn & Co.	Amsterdam	New York	56,000	111,624
MAY 31. By the S. S. *Ninian*, at New York.				
Fred Stern & Co.	Liverpool	New York	3,780	3,780
JUNE 1. By the S. S. *Maryland*, at New York.				
T. D. Downing & Co.	London	New York	123,840	123,840
JUNE 2. By the S. S. *Waaldyk*, at New York.				
The Goodyear Tire & Rubber Co.	Soerabaya	Akron	126,180	
Various	Soerabaya	New York	236,700	
Manhattan Rubber Mfg. Co.	Batavia	New York	27,000	
The Goodyear Tire & Rubber Co.	Batavia	Akron	30,960	
Robertson, Cole & Co.	Batavia	New York	53,280	
L. Littlejohn & Co.	Java	New York	128,000	
United Malaysian Rubber Co., Ltd.	Borneo	New York	16,410	
Charles T. Wilson Co., Inc.	Rotterdam	New York	33,200	651,730
JUNE 3. By the S. S. *Port Darwin*, at New York.				
Poel & Kelly	London	New York	110,340	
T. D. Downing & Co.	London	New York	70,380	
Charles T. Wilson Co., Inc.	London	New York	55,558	
Various	London	New York	1,141,802	1,378,080
JUNE 2. By the S. S. *Vennonia*, at New York.				
Various	London	New York	38,700	38,700
JUNE 3. By the S. S. *Port Curtis*, at New York.				
Chas. T. Wilson Co., Inc.	London	New York	6,720	6,720
JUNE 6. By the S. S. *Colusa*, at San Francisco.				
The Goodyear Tire & Rubber Co.	Singapore	Akron	197,280	
Fred Stern & Co.	Singapore	New York	78,200	
Firestone Tire & Rubber Co.	Penang	Akron	499,860	
Gates Rubber Co.	Penang	Denver	136,260	911,600
JUNE 6. By the S. S. *Kaiserin Auguste Victoria*, at New York.				
Thornett & Fehr, Inc.	Liverpool	New York	5,940	5,940
JUNE 7. By the S. S. *Ixion*, at Seattle.				
Firestone Tire & Rubber Co.	Singapore	Akron	255,960	
The Goodyear Tire & Rubber Co.	Singapore	Akron	180	
L. Littlejohn & Co., Inc.	Singapore	New York	99,360	
Meyer & Brown, Inc.	Singapore	Vancouver	67,200	422,700
JUNE 9. By the S. S. *West Hartland*, at Seattle.				
The Goodyear Tire & Rubber Co.	Singapore	Akron	97,380	
J. E. Lancaster	Singapore	Seattle	353,340	450,720
JUNE 9. By the S. S. *Totori Maru*, at New York.				
G. Kawahara Co.	Singapore	New York	18,000	18,000
JUNE 9. By the S. S. *Arabia Maru*, at Seattle.				
Charles T. Wilson Co., Inc.	Singapore	New York	56,000	56,000
JUNE 10. By the S. S. *Santa Malta*, at New York.				
J. Aron & Co.	Colombo	New York	11,960	
W. R. Grace & Co.	Colombo	New York	7,200	
Baring Bros.	Colombo	New York	13,860	
Hood Rubber Co.	Colombo	Watertown	35,640	
Wilson, Holgate & Co., Ltd.	Colombo	New York	5,220	
Charles T. Wilson Co., Inc.	Colombo	New York	16,258	
Fred Stern & Co.	Colombo	New York	4,480	
Meyer & Brown, Inc.	Colombo	New York	12,320	
L. Littlejohn & Co.	Colombo	New York	67,200	
Various	Colombo	New York	73,378	247,516
JUNE 11. By the S. S. *Borderer*, at New York.				
Fred Stern & Co.	Colombo	New York	44,800	
Meyer & Brown, Inc.	Colombo	New York	11,200	
L. Littlejohn & Co.	Singapore	New York	560,000	
Charles T. Wilson Co., Inc.	Colombo	New York	8,960	
Various	Singapore	New York	1,779,300	2,404,260
JUNE 14. By the S. S. *Verbania*, at New York.				
The Goodyear Tire & Rubber Co.	Liverpool	Akron	157,680	157,680
JUNE 14. By the S. S. *City of Benares*, at New York.				
Wm. Brandt & Sons.	Colombo	New York	38,520	
L. Littlejohn & Co., Inc.	Colombo	New York	89,600	
E. S. Kuh & Valk Co.	Colombo	New York	64,720	
Baring Bros.	Colombo	New York	113,400	
Alfred Kramer & Co.	Colombo	New York	29,600	
Fred Stern & Co.	Colombo	New York	11,200	
Meyer & Brown, Inc.	Colombo	New York	112,000	
Various	Colombo	New York	43,660	502,700
JUNE 14. By the S. S. *Port Bowen*, at New York.				
The B. F. Goodrich Co.	London	Akron	242,280	
General Rubber Co.	London	New York	238,500	
Poel & Kelly	London	New York	147,600	
Various	London	New York	1,080	629,460

PLANTATIONS.

Shipment from:	Shipped to:	Pounds.	Totals.
JUNE 14. By the S. S. *Nitonian*, at Boston.			
Hood Rubber Co.....	London Watertown	119,105	119,105
JUNE 17. By the S. S. *Andijk*, at New York.			
Meyer & Brown, Inc...	Rotterdam New York	145,600	145,600
JUNE 18. By the S. S. *West Coyote*, at New York.			
Various	London New York	29,700	29,700
JUNE 18. By the S. S. *City of Corinth*, at New York.			
The Goodyear Tire & Rubber Co.....	Colombo Akron	86,400	
L. Littlejohn & Co....	Colombo New York	67,200	
Various	Rangoon New York	20,160	173,760
JUNE 21. By the S. S. *New York*, at New York.			
Baring Bros.....	London New York	421,020	421,020
JUNE 21. By the S. S. *Suveric*, at New York.			
Mitsui & Co, Limited..	Singapore New York	67,200	
The B. F. Goodrich Co..	Singapore Akron	19,305	
Thornett & Fehr, Inc..	Singapore New York	44,800	
The Goodyear Tire & Rubber Co.....	Singapore Akron	446,850	
Raw Products Co.....	Singapore New York	84,000	
Fred Stern & Co.....	Singapore New York	336,000	
Meyer & Brown, Inc...	Singapore New York	246,400	
Various	Sinapore New York	818,679	2,063,234
JUNE 21. By the S. S. *Rottig*, at New York.			
Aldens' Successors, Inc.	T'jong Priok New York	52,200	
Fred Stern & Co.....	T'jong Priok New York	44,460	
Various	T'jong Priok New York	96,660	
The B. F. Goodrich Rubber Co.....	Batavia Akron	186,480	
Meyer & Brown, Inc...	Batavia New York	22,400	
Charles T. Wilson Co., Inc.	Soerabaya New York	128,240	
United Malaysian Rubber Co.	Soerabaya New York	3,038	
Various	Batavia New York	348,162	881,640

CENTRALS.

MAY 24. By the S. S. *Zulia*, at New York.			
Oriental Drug Co.....	Venezuela New York	1,950	1,950
MAY 24. By the S. S. *Lake Flattery*, at New York.			
Wm. Schall & Co.....	Cristobal New York	3,750	
Various	Cristobal New York	3,750	7,500
MAY 31. By the S. S. *Lake Gilboa*, at New York.			
Ultramares Corp.....	Colombia New York	1,200	1,200
MAY 31. By the S. S. *Frednes*, at New York.			
Various	Trinidad New York	1,650	1,650
JUNE 1. By the S. S. *Mexico*, from Vera Cruz.			
J. A. Medina Co.....	Vera Cruz New York	2,700	
Rafael del Castillo & Co.	Cartegena New York	600	3,300
JUNE 9. By the S. S. *Colon*, at New York.			
Mecke & Co.....	Cristobal New York	1,495	
Pablo Calvet & Co.....	Cristobal New York	4,140	
Various	Cristobal New York	1,380	7,015
JUNE 9. By the S. S. *Helikon*, at New York.			
Ultramares Corp.....	Cristobal New York	4,945	4,945
JUNE 17. By the S. S. *Tivives*, at New York.			
Ultramares Corp.....	Cristobal New York	5,250	5,250

AFRICANS.

MAY 24. By the S. S. *Westerdyk*, at New York.			
Poel & Kelly.....	Rotterdam New York	130,820	
Various	Rotterdam New York	104,995	135,815
MAY 24. By the S. S. *Nieuw Amsterdam*, at New York.			
Various	Rotterdam New York	476,100	476,100
MAY 26. By the S. S. *Jacques Cartier*, at New York.			
Huth & Co.....	Havre New York	40,940	40,940
MAY 27. By the S. S. *Sarcoxie*, at New York.			
Poel & Kelly.....	Bordeaux New York	25,969	
Various	Bordeaux New York	48,338	74,307
MAY 27. By the S. S. *West Wauneke*, at New York.			
Various	Antwerp New York	32,645	32,645
MAY 31. By the S. S. *Rotterdam*, at New York.			
Various	Rotterdam New York	214,360	214,360
JUNE 1. By the S. S. *Ninian*, at New York.			
Fred Stern & Co.....	Liverpool New York	3,378	3,378
JUNE 3. By the S. S. *Pt. Darwin*, at New York.			
Poel & Kelly.....	Liverpool New York	17,390	17,390
JUNE 6. By the S. S. *Lapland*, at New York.			
Various	Antwerp New York	16,100	16,100
JUNE 6. By the S. S. *West Point*, at New York.			
Chas. Pfizer & Co.....	Lisbon New York	361,215	361,215

Shipment from:	Shipped to:	Pounds.	Totals.
JUNE 6. By the S. S. *Tongrier*, at New York.			
Various	Rouen New York	13,915	13,915
JUNE 8. By the S. S. *Ablanset*, at New York.			
Various	Lisbon New York	943,670	943,670
JUNE 9. By the S. S. *Oxonian*, at New York.			
Fred Stern & Co.....	Liverpool Boston	34,051	34,051
JUNE 16. By the S. S. *Leopoldina*, at New York.			
Joosten & Janssen.....	Havre New York	230	230
JUNE 18. By the S. S. *Andijk*, at New York.			
Various	Rotterdam New York	287,890	287,890
JUNE 21. By the S. S. *Providence*, at New York.			
Wm. Schall & Co.....	Marseilles New York	290,835	290,835
JUNE 21. By the S. S. *Caroline*, at New York.			
Poel & Kelly.....	Bordeaux New York	125,235	
Various	Bordeaux New York	35,765	161,000
JUNE 21. By the S. S. *San Geneiro*, at New York.			
T. D. Downing & Co....	Genoa New York	25,875	25,875
JUNE 22. By the S. S. *Noordam*, at New York.			
Various	Rotterdam New York	161,575	161,575

PONTIANAK.

MAY 28. By the S. S. *Veendyk*, at New York.			
Various	Soerabaya New York	216,000	216,000
JUNE 2. By the S. S. *Waaldyk*, at New York.			
E. Everett Carleton & Co.	Soerabaya New York	78,300	
Various	Soerabaya New York	295,800	374,100
JUNE 6. By the S. S *Maaldyk*, at New York.			
The United Malaysian Rubber Co., Limited..	Borneo New York	100,471	100,471
JUNE 21. By the S. S. *Rotti*, at New York.			
United Malaysian Rubber Co., ...	Soerabaya New York	139,800	
L. Littlejohn & Co., Inc.	Soerabaya New York	132,000	271,800
JUNE 21. By the S. S. *Suveric*, at New York.			
Various	Singapore New York	50,460	50,460

BALATA.

MAY 31. By the S. S. *Lake Sunapee*, at New York.			
Antoine Chiris Co.....	San Juan New York	6,450	6,450
MAY 31. By the S. S. *Matura*, at New York.			
Middleton & Co.....	Trinidad New York	18,495	
Edward Maurer Co., Inc.	Trinidad New York	7,800	26,295
JUNE 10. By the S. S. *Carrillo*, at New York.			
American Trading Co...	Santa Marta New York	1,666	1,666
JUNE 21. By the S. S. *Oranje Nassau*, at New York.			
Wm. Schall & Co.....	Paramaribo New York	2,550	
Middleton & Co., Ltd..	Paramaribo New York	1,500	4,050
MAY 24. By the S. S. *Valacia*, at New York.			
Earle Bros.	London New York	2,550	2,550
MAY 29. By the S. S. *Lake Sunapee*, at New York.			
Middleton & Co., Limited	Surinam New York	6,213	6,213
MAY 31. By the S. S. *Lake Gilboa*, at New York.			
Ultramares Corp.....	Colombia New York	7,050	
W. Reed Williams, Inc..	Colombia New York	2,700	9,750

GUAYULE.

MAY 26. By rail at Eagle Pass, Texas.				
Continental-Mexican Rubber Co.....	Mexico	Akron	134,775	134,775
JUNE 14. By rail at Laredo, Texas.				
Continental-Mexican Rubber Co.	Mexico	New York	60,000	60,000
JUNE 16. By rail at Laredo, Texas.				
Continental-Mexican Rubber Co.	Mexico	New York	58,000	58,000

GUTTA PERCHA.

JUNE 2. By the S. S. *Waaldyk*, at New York.			
The United Malaysian Rubber Co., Limited..	Borneo	New York	6,052	6,052
JUNE 21. By the S. S. *Suveric*, at New York.			
Various	Singapore	New York	3,300	3,300

GUTTAS.

JUNE 2. By the S. S. *Waaldyk*, at New York.				
Rubber Co., Limited..				
The United Malaysian	Borneo	New York	35,796	35,796

UNITED STATES CRUDE RUBBER IMPORTS FOR 1920 (BY MONTHS).

1920.	Plantations.	Parás.	Africans.	Centrals.	Guayule.	Manicoba and Matto Grosso.	Balata.	Miscellaneous Gum.	Waste.	Totals. 1920.	Totals. 1919.
January .....tons	17,799	2,620	821	111	.....	.....	.....	.....	.....	21,351	7,235
February	29,681	2,456	558	265	34	.....	.....	.....	.....	32,994	17,456
March	28,533	2,463	514	23	114	3	113	983	1,252	33,998	28,223
April	21,036	1,893	628	29	79	10	22	812	448	24,957	28,146
May	24,443	2,025	662	95	113	.....	45	1,059	224	28,666	97,410
Totals	121,492	11,457	3,183	523	340	13	180	2,854	1,924	141,966	178,470

(Compiled by The Rubber Association of America, Inc.)

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES, DURING THE MONTH OF APRIL, 1920.

EXPORTED TO—	Belting. Value.	Hose. Value.	Packing. Value.	Boots. Pairs.	Boots. Value.	Shoes. Pairs.	Shoes. Value.	Soles and Heels. Value.	Automobile Tires. Casings. Value.	Automobile Tires. Inner Tubes. Value.	Automobile Tires. Solid Tires. Value.	Automobile Tires. All Others. Value.	Insulated Wire and Cables. Value.	Druggists' Rubber Sundries. Value.	All Other Manufactures of Rubber. Value.	Totals. Value.
EUROPE:																
Azores and Madeira Islands	.....	.....	.....	.....	.....	.....	.....	$130	.....	.....	.....	.....	.....	.....	.....	$130
Belgium	$916	.....	$1,372	.....	.....	96	$55	2,305	$58,539	$6,910	$628	.....	$814	$11,213	$17,770	100,522
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	61	13	.....	.....	.....	.....	.....	74
Denmark	.....	$2,277	241	296	$1,191	9,797	13,789	1,240	125,528	5,251	.....	.....	.....	9,751	7,997	167,265
Finland	.....	.....	.....	.....	.....	31,300	36,383	.....	21,000	2,400	2,155	.....	.....	.....	390	62,328
France	11,773	1,201	.....	.....	.....	5,112	3,370	.....	113,986	13,929	492	.....	3,164	4,531	53,757	206,203
Germany	.....	.....	.....	1	6	.....	.....	.....	29,837	10,356	.....	.....	277	.....	12	40,488
Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....	161	30	.....	.....	.....	.....	.....	191
Greece	.....	.....	.....	.....	.....	5	5	1,531	84,634	4,653	.....	$880	.....	1,113	100	92,916
Iceland and Faroe Islands	.....	.....	.....	105	375	.....	.....	.....	760	.....	.....	.....	14	.....	1,644	2,793
Italy	.....	.....	824	.....	.....	3,353	3,421	.....	62,995	5,953	.....	.....	112	7,184	5,880	86,369
Netherlands	.....	.....	289	12	45	2,136	1,884	291	49,140	2,560	428	.....	2,321	2,383	22,937	82,278
Norway	1,475	10,324	127	2,890	4,488	141,675	123,509	11,016	86,139	11,308	30,681	.....	950	75,707	23,126	378,850
Poland and Danzig	.....	.....	.....	.....	.....	.....	.....	.....	.....	50	.....	.....	.....	1,106	.....	1,156
Portugal	.....	.....	6	.....	.....	.....	.....	.....	37,629	3,040	.....	.....	.....	.....	38	40,713
Rumania	.....	.....	.....	.....	.....	.....	.....	.....	8,334	656	3,974	.....	.....	.....	.....	12,964
Russia in Europe	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	159	159
Spain	837	39	14	.....	.....	8,724	5,686	2,899	90,163	27,623	10,543	60	4,367	4,238	4,395	150,864
Sweden	8,007	2,178	85	444	1,350	.....	.....	.....	191,778	23,113	125	4,861	2,074	6,686	10,907	251,164
Switzerland	.....	.....	.....	.....	.....	11,944	11,441	.....	124,349	6,405	.....	.....	1,034	256	7,941	151,426
Turkey in Europe	.....	.....	4	.....	.....	2,032	2,774	.....	5,478	377	.....	.....	.....	920	233	9,786
England	3,040	32,451	2,272	4,092	8,140	290,297	235,366	3,408	230,282	21,566	14,846	4,029	12,860	54,804	194,270	817,334
Scotland	.....	.....	.....	.....	.....	.....	.....	100	6,375	80	.....	.....	.....	.....	3,170	9,725
Ireland	.....	.....	.....	.....	.....	.....	.....	413	123	.....	.....	.....	.....	.....	.....	536
Yugoslavia, Albania, etc	.....	.....	.....	.....	.....	.....	.....	.....	2,000	.....	.....	.....	.....	.....	.....	2,000
TOTALS, EUROPE	$26,048	$48,470	$5,234	7,840	$15,595	506,471	$437,683	$23,333	$1,329,291	$146,273	$63,872	$9,830	$27,987	$179,892	$354,726	$2,668,234
NORTH AMERICA:																
Bermuda	.....	$477	$458	4	$22	1,123	$1,179	$407	.....	.....	.....	$39	$12	$592	$935	$4,121
British Honduras	$70	46	.....	.....	.....	1,193	1,770	.....	$690	$25	.....	.....	67	.....	281	2,949
Canada	24,171	18,100	9,608	4,347	15,942	30,621	33,783	2,056	183,472	16,555	$50,827	2,634	23,767	16,606	220,615	618,136
Costa Rica	896	151	36	.....	.....	12	13	507	1,196	220	.....	31	272	165	672	4,159
Guatemala	1,986	.....	307	.....	.....	.....	.....	1,361	5,417	2,913	.....	.....	129	2,909	3,212	18,234
Honduras	635	636	900	1	3	86	111	230	925	210	75	13	174	196	1,172	5,280
Nicaragua	1,050	634	56	.....	.....	480	496	1,959	3,353	369	19	.....	581	67	665	9,249
Panama	787	3,541	700	120	310	8,600	7,424	3,409	33,846	1,410	1,191	416	666	11,303	3,057	68,060
Salvador	441	954	344	.....	.....	.....	.....	3,112	12,930	600	.....	.....	216	1,437	795	20,829
Mexico	35,183	28,867	12,637	26	122	22,931	21,757	8,214	71,677	8,961	10,913	4,550	7,085	25,397	19,060	254,423
Miquelon, Langley, etc	.....	.....	.....	.....	.....	.....	.....	.....	20	.....	.....	.....	.....	.....	22	42
Newfoundland and Labrador	2,187	100	.....	12,444	36,617	2,018	2,503	1,108	653	93	.....	125	94	1,733	2,149	47,362
Barbados	174	.....	.....	.....	.....	269	249	31	3,607	277	160	.....	.....	380	802	5,680
Jamaica	270	583	15	102	158	1,368	1,659	185	8,033	479	358	156	9	483	1,229	13,617
Trinidad and Tobago	.....	94	109	.....	.....	10,619	7,864	789	14,836	1,623	1,804	160	929	1,297	122	29,627
Other British West Indies	98	135	35	.....	.....	1,307	1,575	.....	900	85	.....	56	29	73	234	3,220
Cuba	3,010	19,255	30,433	.....	.....	41,226	41,840	11,763	165,965	29,424	21,587	5,238	21,545	42,825	25,210	418,095
Virgin Islands of the U. S.	.....	953	183	.....	.....	723	1,050	500	1,012	29	.....	1,011	.....	.....	112	4,850
Dutch West Indies	.....	17	.....	.....	.....	2	2	.....	1,422	280	.....	60	43	23	69	1,916
French West Indies	242	.....	.....	30	30	.....	.....	.....	1,522	.....	183	85	.....	45	89	2,196
Haiti	51	34	.....	.....	.....	124	149	30	4,141	408	.....	.....	258	.....	1,403	6,474
Dominican Republic	200	248	15	.....	.....	1,713	2,617	835	15,816	3,057	1,404	1,526	1,166	181	6,150	33,215
TOTALS, NORTH AMERICA	$71,451	$74,825	$55,836	17,074	$53,204	124,415	$126,041	$36,496	$531,433	$67,018	$88,521	$16,100	$57,042	$105,712	$288,055	$1,571,734
OCEANIA:																
Australia	$4,346	$695	$4,391	.....	.....	252	$287	$140	$113,459	$6,342	$4,563	$154	$1,674	$5,800	$6,124	$147,975
New Zealand	222	1,035	2,867	732	$3,919	3,176	2,321	.....	84,402	10,929	53,623	2,561	3,492	1,225	6,736	173,332
Other British Oceania	.....	.....	.....	.....	.....	160	144	.....	2,101	.....	.....	.....	.....	.....	.....	2,245
French Oceania	.....	50	159	.....	.....	651	773	.....	1,935	48	596	81	.....	37	249	3,928
Other Oceania	.....	.....	.....	.....	.....	202	160	.....	55	.....	.....	.....	.....	.....	135	350
Philippine Islands	8,657	772	3,821	48	87	6,360	4,944	17,175	143,414	14,845	16,223	8,500	13,312	410	23,181	255,341
TOTALS, OCEANIA	$13,225	$2,552	$11,238	780	$4,006	10,801	$8,629	$17,315	$345,366	$32,164	$75,005	$11,296	$18,478	$7,472	$36,425	$583,171
SOUTH AMERICA:																
Argentina	$26,026	$24,051	$9,275	240	$940	350	$360	$11,231	$211,037	$21,821	$4,600	$7,398	$62,491	$5,198	$30,454	$414,882
Bolivia	.....	491	.....	.....	.....	.....	.....	.....	5,412	1,856	.....	.....	.....	.....	117	7,876
Brazil	3,673	7,903	4,966	.....	.....	36,430	34,680	13,840	96,677	17,796	10,210	1,571	117,513	3,734	15,106	327,669
Chile	3,914	7,933	5,175	262	1,872	3,526	3,320	128	20,970	1,715	3,646	.....	9,351	367	7,772	66,163
Colombia	378	490	775	1	4	1,208	1,160	2,617	7,141	1,137	1,781	46	2,860	2,077	2,842	23,308
Ecuador	.....	78	9	.....	.....	48	60	.....	2,826	.....	.....	.....	388	690	232	4,283
British Guiana	.....	10	.....	.....	.....	3,523	3,909	.....	2,160	339	.....	.....	369	20	208	7,015
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	486	.....	.....	.....	.....	151	308	945
French Guiana	.....	.....	.....	.....	.....	.....	.....	.....	201	.....	.....	.....	.....	.....	.....	201
Paraguay	.....	64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	450	.....	450	964
Peru	.....	698	2,103	.....	.....	16	69	.....	14,858	2,296	2,229	140	7,246	895	1,918	32,452
Uruguay	.....	862	214	.....	.....	1,594	1,274	469	31,565	2,902	3,208	1,536	1,821	1,207	5,780	50,838
Venezuela	34	1,339	190	.....	.....	475	436	.....	24,090	3,720	627	100	2,271	3,717	6,456	42,980
TOTALS, SOUTH AMERICA	$34,025	$43,919	$22,707	503	$2,816	47,170	$45,268	$28,285	$417,423	$53,582	$26,301	$10,791	$204,760	$18,056	$71,643	$979,576

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORY OF THE UNITED STATES.

EXPORTED TO—	Belting. Value.	Hose. Value.	Packing. Value.	Boots. Pairs.	Boots. Value.	Shoes. Pairs.	Shoes. Value.	Soles and Heels. Value.	Automobile Tires. Casings. Value.	Automobile Tires. Inner Tubes. Value.	Automobile Tires. Solid Tires. Value.	Automobile Tires. All Others. Value.	Insulated Wire and Cables. Value.	Druggists' Rubber Sundries. Value.	All Other Manufactures of Rubber. Value.	Totals. Value.
EUROPE:																
ASIA:																
Aden	$9,047	$5,090	$1,430	.....	.....	.....	.....	$982	.....	$248	.....	.....	$3,131	$2,014	$5,349	$1,230
China	.....	.....	.....	.....	.....	1,022	$1,209	.....	31,131	2,637	$4,438	.....	.....	.....	.....	65,476
Kwantung, leased territory	.....	.....	.....	1	$4	2	.....	.....	3,462	.....	.....	.....	.....	.....	.....	3,468
Chosen	.....	37	.....	.....	.....	252	234	.....	4,770	1,985	.....	$15	.....	18	.....	7,059
British India	.....	429	.....	91	136	1,700	1,711	$22	55,429	8,928	18,728	.....	.....	1,074	2,262	88,083
Straits Settlements	.....	10	.....	.....	.....	60	30	.....	153,565	8,722	13,818	849	3,021	20	580	180,615
Other British East Indies	1,323	.....	.....	.....	.....	.....	.....	.....	9,894	3,662	.....	382	.....	.....	221	15,482
Dutch East Indies	.....	261	650	.....	.....	.....	.....	.....	35,503	4,100	35,797	4,000	8,118	.....	551	88,920
French East Indies	.....	.....	.....	.....	.....	.....	.....	.....	234	.....	.....	.....	.....	.....	12	246
Hongkong	.....	.....	.....	168	336	1,418	1,808	.....	2,345	.....	.....	958	35	94	93	5,669
Japan	33,488	13,177	1,396	1,802	4,566	39,230	52,295	.....	50,748	8,436	2,022	962	803	1,879	26,709	196,381
Persia	.....	.....	.....	.....	.....	3,200	3,262	.....	650	200	.....	.....	.....	.....	.....	4,112
Russia in Asia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
Siam	.....	.....	.....	.....	.....	456	421	.....	1,757	90	.....	.....	.....	.....	22	3,213
Turkey in Asia	.....	.....	.....	.....	.....	.....	.....	411	2,510	728	.....	120	.....	216	257	4,026
TOTALS, ASIA	$43,858	$18,944	$3,376	2,062	$5,042	47,839	$60,972	$433	$351,980	$39,736	$74,803	$7,286	$15,472	$5,315	$36,785	$664,002
AFRICA:																
Belgian Kongo	.....	$2,591	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$2,591
British West Africa	.....	.....	.....	.....	.....	.....	.....	.....	$58,688	$11,623	.....	.....	.....	.....	.....	70,627
British South Africa	$26,914	11,041	$12,736	148	$573	5,092	$4,824	$1,428	84,819	12,762	.....	$347	$1,828	$316	$8,900	166,983
British East Africa	3,978	30	.....	.....	.....	.....	.....	.....	4,652	320	.....	.....	66	811	.....	9,046
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	200	50	.....	.....	.....	.....	194	444
French Africa	.....	.....	.....	.....	.....	.....	.....	.....	14,188	4,560	.....	.....	.....	.....	225	18,973
Morocco	.....	.....	.....	.....	.....	.....	.....	.....	140	25	.....	.....	.....	.....	.....	165
Portuguese Africa	.....	84	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	105	189
Egypt	.....	3,117	.....	.....	.....	.....	.....	.....	10,665	2,407	.....	2,384	348	.....	243	19,164
TOTALS, AFRICA	.....	$16,863	$12,736	148	$573	5,092	$4,824	$1,428	$173,352	$31,747	.....	$2,731	$2,242	$1,127	$9,667	$288,182
GRAND TOTALS	.....	$205,573	$111,127	28,407	$81,236	741,788	$683,417	$107,290	$3,148,845	$370,520	$328,502	$58,034	$526,556	$116,999	$797,301	$6,754,899

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORY OF THE UNITED STATES.

	Belting, Hose and Packing. Values.	Boots and Shoes. Pairs.	Boots and Shoes. Value.	Tires. Automobile. Value.	Tires. All Others. Value.	Insulated Wire and Cables. Value.	Druggists' Rubber Sundries. Value.	All Other Manufactures of Rubber. Value.	Totals. Value.
Hawaii	$23,324	.....	.....	$91,783	$3,269	.....	.....	$18,192	$136,568
Porto Rico	27,571	.....	.....	58,390	1,161	.....	.....	16,301	103,423
TOTALS	$50,895	.....	.....	$150,173	$4,430	.....	.....	$34,493	$239,991

(*Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.*)

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	April. 1919. Pounds.	1919. Value.	1920. Pounds.	1920. Value.
UNMANUFACTURED—*free:*				
India rubber:				
From France	.....	.....	864,073	$251,239
Netherlands	.....	.....	133,674	54,892
Portugal	2,600	$720	14,100	9,869
United Kingdom	5,635,298	2,732,804	8,800,914	4,233,181
Canada	647,043	286,906	41,880	15,009
Central America	24,669	9,746	16,462	3,855
Mexico	40,274	11,925	7,139	2,185
Brazil	3,296,587	960,330	5,183,214	1,499,276
Peru	199,859	81,068	789,052	246,707
Other South Am.	345,014	131,698	113,005	27,874
British E. Indies	40,637,290	15,820,145	39,262,162	19,215,266
Dutch E. Indies	10,178,932	3,819,947	8,097,239	3,785,268
Other countries	758,264	285,821	306,355	108,772
Totals	61,765,830	$24,141,110	63,629,269	$29,453,393
Balata	132,321	$63,493	79,073	$47,037
Guayule	521,243	108,943	105,658	22,676
Jelutong (Pontianak)	1,411,499	118,156	1,720,819	298,528
Gutta percha	610,206	101,408	804,191	170,350
Rubber scrap	848,052	67,724	1,852,484	108,772
Totals, unmanufactured	65,289,151	$24,600,834	68,191,494	$30,100,756
Chicle (dutiable)	743,951	497,984	431,718	312,998
MANUFACTURED—*dutiable:*				
India rubber and gutta percha	.....	113,552	.....	73,972
India rubber substitutes	283	44	8,946	1,539

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
India rubber:				
Scrap and old	588,488	$78,796	699,424	$41,888
Reclaimed	311,361	52,379	289,964	50,796
Belting[1]	.....	533,769	.....	219,499
Hose[1]	.....		.....	205,573
Packing[1]	.....		.....	111,127
Boots[1]	17,078	52,569	28,407	81,236
Shoes[1]	294,236	224,247	741,788	683,417
Soles and heels[1]	.....	.....	.....	107,290
Tires:				
For automobiles[1]	.....		.....	
Casings[1]	.....		.....	3,148,845
Inner tubes[1]	.....	3,923,924	.....	370,520
Solid tires[1]	.....		.....	328,502
All other tires[1]	.....	137,754	.....	58,034
Druggists' rubber sundries[1]	.....	116,524	.....	116,999
Suspenders and garters	.....	181,380	.....	301,538
Other rubber manufactures[1]	.....	941,292	.....	797,301
Totals manufactured	.....	$6,242,634	.....	$6,622,565
Fountain pens ...*number*	33,905	$43,525	57,081	$87,326
Insulated wire and cables[1]	.....	789,991	.....	526,556

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber	433,206	$199,409	845,016	$238,954
Balata	64,960	37,874	98,419	49,485
Gutta percha	.....	.....	14,560	6,860
Jelutong (Pontianak)	2,427	606	.....	.....
Totals, unmanufactured	.....	$237,889	.....	$295,299
MANUFACTURED—				
Gutta percha	.....	$621	.....	$1,670
Totals, manufactured	.....	$621	.....	$1,670
Chicle	.....	.....	43,915	$44,352

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Belting, hose and packing	.....	$23,579	.....	$25,532
Boots and shoes...*pairs*	11,477	31,630	11,385	43,133
Other rubber goods	.....	3,880	.....	6,316
Totals	.....	$59,089	.....	$74,981
To Hawaii:				
Belting, hose and packing	.....	$4,952	.....	$23,324
Automobile tires	.....	91,927	.....	91,783
Other tires	.....	1,558	.....	3,269
Other rubber goods	.....	13,352	.....	18,192
Totals	.....	$111,789	.....	$136,568
To Porto Rico:				
Belting, hose and packing	.....	$6,187	.....	$27,571
Automobile tires	.....	74,871	.....	58,390
Other tires	.....	3,412	.....	1,161
Other rubber goods	.....	6,043	.....	16,301
Totals	.....	$90,513	.....	$103,423

To Philippine Islands—treated as foreign commerce.

[1] Details of exports of domestic merchandise by countries during April are given on pages 698-699 of this issue.

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

UNMANUFACTURED—	April. 1919. Pounds.	1919. Value.	1920. Pounds.	1920. Value.
Crude rubber: From—				
Straits Settlements	9,555,400	£1,002,840	5,218,700	£636,494
Federated Malay States	11,205,200	1,188,080	6,966,600	848,448
British India	1,633,300	175,604	800,100	96,420
Ceylon and dependencies	4,025,400	437,376	3,431,500	415,713
Other Dutch possessions in Indian Seas	1,505,100	166,213	661,700	80,981
Dutch East Indies (except other Dutch possessions in Indian Seas)	1,788,400	197,323	1,753,100	210,055
Other countries in East Indies and Pacific not elsewhere specified	243,600	25,888	173,500	20,982
Brazil	3,706,500	400,880	1,386,300	149,940
Peru	12,000	840	900	90
South and Central America (except Brazil and Peru)	23,700	2,225	5,700	672
West Africa:				
French West Africa	.....	.....	4,700	255
Gold Coast	43,400	4,790	17,100	1,937
Other parts of West Africa	69,900	8,390	357,100	25,074
East Africa (including Madagascar)	218,000	20,735	293,700	33,527
Other countries	60,200	7,167	146,500	11,701
Totals	34,090,100	£3,658,351	21,247,200	£2,532,289
Waste and reclaimed rubber	380,600	11,295	996,700	19,717
Totals, unmanufactured	34,470,700	£3,669,646	22,243,900	£2,552,006
Gutta percha and balata	607,700	83,172	502,500	84,106
Rubber substitutes	.....	.....	246,000	10,417
MANUFACTURED—				
Boots and shoes..*dozen pairs*	28,773	£40,647	26,698	£68,689
Waterproofed clothing	.....	1,062	.....	270
Tires and tubes	.....	270,071	.....	501,394
Other rubber manufactures	.....	41,742	.....	58,600
Insulated wire	.....	.....	.....	5,180
Totals	.....	£353,522	.....	£634,133

EXPORTS.

UNMANUFACTURED—				
Waste and reclaimed rubber	420,600	£12,132	1,576,900	£41,959
*Rubber substitutes	.....	.....	257,000	12,686
Totals	.....	£12,132	.....	£54,645
MANUFACTURED—				
Boots and shoes..*dozen pairs*	9,651	£17,499	6,719	£14,833
Waterproofed clothing	.....	84,816	.....	267,648
Insulated wire	.....	37,716	.....	121,048
Submarine cables	.....	87,084	.....	88,278
Tires and tubes	.....	266,297	.....	552,196
Other rubber manufactures	.....	204,533	.....	369,818
Totals	.....	£697,945	.....	£1,413,821

EXPORTS—COLONIAL AND FOREIGN.

UNMANUFACTURED—				
Crude rubber:				
To Sweden, Norway and Denmark	528,300	£73,252	199,900	£22,468
Germany	.....	.....	1,193,700	142,204
Belgium	1,161,300	81,709	998,100	121,854
France	2,387,700	267,769	3,142,300	421,811
Spain	45,300	5,286	99,500	13,281
Italy	753,000	86,225	1,323,000	174,074
Other European countries	.....	.....	57,700	5,940
United States	2,057,700	193,263	7,676,300	938,762
Canada	48,500	5,425	714,300	85,107
Other countries	160,400	20,710	203,100	26,419
Totals, rubber	7,142,200	£733,639	15,607,900	£1,951,920
Waste and reclaimed	.....	.....	8,300	373
Gutta percha and balata	163,500	6,419	216,200	34,275
*Rubber substitutes	.....	.....	7,300	490
MANUFACTURED—				
Boots and shoes..*dozen pairs*	13	£73	3	£26
Waterproofed clothing	.....	397	.....	.....
Tires and tubes	.....	14,548	.....	32,411
Insulated wire	.....	1,243	.....	85
Other manufactures	.....	4,683	.....	1,914
Totals, manufactured	.....	£20,944	.....	£34,436

*Included in "Other Articles," Class III, T., prior to 1920.

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—*free:*	March. 1919. Pounds.	1919. Value.	1920. Pounds.	1920. Value.
Rubber, gutta percha, etc.:				
From United Kingdom	86,368	$29,012	905,319	$581,613
United States	414,988	182,047	516,817	192,995
Brazil	.....	.....	36,036	26,327
British East Indies:				
Ceylon	333,079	146,697	291,200	192,391
Straits Settlements	734,656	274,928	1,652,309	840,583
Dutch East Indies	.....	.....	114	57
Other countries	.....	.....	4,486	2,086
Totals	1,569,091	$632,684	3,406,281	$1,836,052
Rubber, recovered	314,801	$50,538	586,432	$88,549
Rubber scrap	233,922	25,941	101,502	11,420
Rubber substitutes	166,057	19,921	271,962	32,584
Totals unmanufactured	2,283,871	$729,084	4,366,177	$1,968,605
PARTLY MANUFACTURED—				
Hard rubber sheets and rods	4,048	$3,185	18,827	$14,688
Hard rubber tubes	.....	4,619	.....	2,835
Rubber thread, not covered	5,347	3,511	6,227	8,998
Totals, partly manufactured	9,395	$11,315	25,054	$26,521
MANUFACTURED—				
Belting	.....	$10,955	.....	$15,836
Hose	.....	11,697	.....	9,941
Packing	.....	7,391	.....	17,133
Boots and shoes	.....	24,850	.....	21,500
Clothing, including waterproofed	.....	20,065	.....	29,962
Gloves	.....	.....	.....	1,195
Hot water bottles	.....	†	.....	3,799
Mats and matting	.....	766	.....	460
Tires, solid	.....		.....	14,764
Tires, pneumatic	.....	166,345	.....	380,913
Tires, inner tubes	.....		.....	47,720
Tires, other kinds	.....		.....	.....
Other manufactures	.....	191,320	.....	367,711
Totals, manufactured	.....	$413,324	.....	$910,934
Totals, rubber imports	.....	$1,153,723	.....	$2,906,060
Insulated wire and cables:				
Wire and cables covered with cotton, linen, silk, rubber, etc.	.....	$36,285	.....	$11,301
Copper wire and cables, covered as above	.....	*	.....	24,871
Chicle	279,666	229,372	167,846	121,322

†Included in "Other Manufactures." *Included in "Wire and cables."

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

UNMANUFACTURED—	March. 1919. Produce of Canada. Value.	1919. Reexports of Foreign Goods. Value.	1920. Produce of Canada. Value.	1920. Reexports of Foreign Goods. Value.
Crude and waste rubber	$8,739	.....	$37,072	.....
MANUFACTURED—				
Belting	$9,391	.....	$1,347	.....
Hose	37,165	.....	16,778	.....
Boots and shoes	626,454	$533	146,814	$76
Clothing, including waterproofed	944	.....	5,132	.....
Tires, pneumatic	.....	.....	974,026	.....
Tires, other kinds	606,944	2,097	.....	3,677
Other manufactures	.....	1,311,129	10,799	1,528
Totals, manufactured	$1,280,898	$1,313,759	$1,144,896	$5,281
Totals, rubber exports	$1,289,637	$1,313,759	$1,181,968	$5,281

EXPORTS OF INDIA RUBBER FROM MANAOS DURING APRIL, 1920.

EXPORTERS.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	TOTALS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	TOTALS.	GRAND TOTALS.
Tancredo, Porto & Co.....*kilos*	207,360	13,947	19,087	16,801	257,195	53,349	48,873	14,051	274,459	390,732	647,927
General Rubber Co. of Brazil	171,591	14,478	14,491	13,230	213,790	25,282	924	27,052	802	54,060	267,850
Ohliger & Co	104,631	.....	.....	.....	104,631	27,756	10,380	4,327	39,115	81,578	186,209
Stowell & Co	66,692	5,507	14,138	27,464	113,801	.....	6,790	25,842	480	33,112	146,913
E. Levy & Co	28,686	3,958	51,939	.....	84,583	.....	.....	.....	.....	.....	84,583
Adelbert H. Alden, Limited	15,640	.....	.....	.....	15,640	.....	4,409	9,305	554	14,268	29,908
Semper & Co	13,600	1,600	3,330	.....	18,530	.....	.....	.....	.....	.....	18,530
Moraes, Carneiro & Co	4,519	480	398	559	5,956	5,600	320	150	.....	6,070	12,026
	612,719	39,970	103,383	58,054	814,126	111,987	71,696	80,727	315,410	579,820	1,393,946
In transit, Iquitos	7,599	190	1,120	.....	8,909	8,672	25,347	7,326	10,913	52,258	61,167
Totals .....*kilos*	620,318	40,160	104,503	58,054	823,035	120,659	97,043	88,053	326,323	632,078	1,455,113

(Compiled by Stowell & Co., Manaos, Brazil.)

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK.

IMPORTS.

	April. 1919. Pounds.	1919. Value.	1920. Pounds.	1920. Value.
UNMANUFACTURED—*free:*				
Crude rubber:				
From Belgium	.....	.....	116,819	$58,175
France	.....	.....	864,073	251,239
Netherlands	.....	.....	133,674	54,892
Portugal	2,600	$720	14,100	9,689
England	5,635,298	2,732,804	8,712,078	4,186,309
Canada	262,380	115,132	.....	.....
Costa Rica	2,021	762	445	153
Guatemala	2,200	1,091	.....	.....
Honduras	150	109	.....	.....
Nicaragua	12,324	4,282	6,218	1,713
Panama	389	95	7,264	1,573
Salvador	5,858	2,958	.....	.....
Mexico	8,420	2,332	7,139	2,185
Trinidad	5,383	2,603	1,135	478
Brazil	3,296,587	960,330	5,183,214	1,499,276
Colombia	217,184	88,556	38,837	10,445
Ecuador	51,300	12,826	56,009	12,776
Peru	199,859	81,068	789,052	246,707
Uruguay	17,900	8,950	18,159	4,653
Venezuela	58,710	21,366	.....	.....
British India	67,365	29,621	435,912	215,660
Straits Settlements	1,086,118	408,429	32,605,537	15,971,292
British E. Indies	14,396,486	5,824,032	4,140,785	1,908,405
Dutch E. Indies	7,926,608	3,002,396	7,647,262	3,623,383
Japan	.....	.....	67,300	33,409
Philippines	120,881	45,216	13,096	5,896
British W. Africa	61,934	13,871	92,572	41,109
British S. Africa	.....	.....	13,871	5,548
Portuguese Africa	.....	.....	962	230
Totals	33,437,955	$13,359,549	60,965,513	$28,145,195
Jelutong (Pontianak):				
From France	.....	.....	43,310	$7,464
Straits Settlements	344,861	$28,772	1,677,509	291,064
Dutch E. Indies	739,952	66,453	.....	.....
Totals	1,084,813	$95,225	1,720,819	$298,528
Gutta percha:				
From England	1,745	$312	769	$832
Straits Settlements	176,204	20,302	683,691	150,030
Dutch E. Indies	374,933	69,179	150	30
British W. Africa	.....	.....	7,624	1,905
Totals	552,882	$89,793	692,234	$152,797
Balata:				
From England	.....	.....	11,396	$9,555
Panama	59,042	$25,396	2,420	868
Trinidad	187	112	.....	.....
Colombia	17,426	8,098	18,083	7,184
Ecuador	9,900	3,960	.....	.....
British Guiana	.....	.....	17,854	10,505
Dutch Guiana	2,241	1,837	19,180	14,417
Venezuela	37,025	20,723	10,140	4,508
Totals	125,821	$60,126	79,073	$47,037
Reclaimed and scrap rubber	331,420	$29,687	1,308,534	$84,348
Totals, unmanufactured	35,532,891	$13,634,380	64,766,173	$28,707,905
Chicle *dutiable*	211,545	$99,224	368,192	$272,889
Rubber substitutes	283	44	8,946	1,539
Manufactures of rubber and gutta percha *dutiable*	.....	48,263	.....	42,000

EXPORTS.

MANUFACTURED:				
Automobile tires	.....	$3,128,295	.....	$2,259,097
Inner tubes	.....		.....	273,426
Solid tires	.....		.....	211,926
All other tires	.....	116,852	.....	37,698
Belting	.....	277,127	.....	101,384
Hose	.....		.....	125,872
Packing	.....		.....	66,598
Rubber boots *pairs*	6,938	20,540	7,823	20,001
Rubber shoes *pairs*	228,020	165,131	370,259	353,657
Soles and heels	.....	.....	.....	78,531
Druggists' sundries	.....	63,389	.....	72,088
Other manufactures of rubber	.....	573,254	.....	460,651
Totals, manufactured	.....	$4,344,588	.....	$4,060,929
Insulated wire	.....	$641,054	.....	$437,331
Fountain pens *number*	30,137	39,009	54,618	84,607
Suspenders and garters	.....	147,183	.....	257,228
Chewing gum	.....	102,984	.....	167,899
UNMANUFACTURED:				
Reclaimed and scrap rubber	436,422	65,703	111,254	14,524

FOREIGN EXPORTS.

UNMANUFACTURED:				
India rubber	31,450	$19,100	710,130	$180,859
Gutta percha	.....	.....	14,560	6,860
Balata	64,960	37,874	98,417	49,484
Rubber manufactures	.....	605	.....	1,526

PORT OF BOSTON.

IMPORTS.

	April. 1919. Pounds.	1919. Value.	1920. Pounds.	1920. Value.
UNMANUFACTURED—*free:*				
Crude rubber:				
From England	.....	.....	88,836	$46,872
Straits Settlements	323,703	$89,281	.....	.....
Gutta percha	.....	.....	111,957	17,353
Rubber scrap	1,900	135	104,234	5,681
Rubber manufactures, *dutiable*	.....	4,665	.....	18,011
MANUFACTURED:				
EXPORTS.				
Automobile tires	.....	$21	.....	$4,435
Inner tubes	.....	.....	.....	2,301
Solid tires	.....	.....	.....	24
All other tires	.....	37	.....	125
Belting	.....	1,685	.....	5,067
Hose	.....	.....	.....	8,315
Rubber boots	1,740	5,522	13,124	33,605
Rubber shoes	8,385	6,930	297,107	250,282
Soles and heels	.....	.....	.....	2,976
Druggists' sundries	.....	2,031	.....	10,361
All other manufactures of rubber	.....	42,330	.....	57,154
Totals	10,125	$58,556	310,331	$384,645
Insulated wire	.....	$144	.....	$30,737
Suspenders and garters	.....	2,881	.....	12,487
Rubber scrap	57,725	7,725	50,812	4,573

PORT OF NEW ORLEANS.

IMPORTS.

	April. 1919. Pounds.	1919. Value.	1920. Pounds.	1920. Value.
UNMANUFACTURED—*free:*				
Crude rubber:				
From Nicaragua	1,727	$449	2,535	$416
Mexico	31,854	9,593	.....	.....
Totals	33,581	$10,042	2,535	$416
Chicle	11,064	7,771	997	659
MANUFACTURED:				
EXPORTS.				
Automobile tires	.....	$5,071	.....	$37,403
Inner tubes	.....		.....	11,084
Solid tires	.....		.....	445
All other tires	.....	658	.....	891
Belting	.....	3,357	.....	12,787
Hose	.....		.....	9,964
Packing	.....		.....	15,003
Rubber boots	7	25	2	7
Rubber shoes	4,546	4,530	13,563	15,258
Soles and heels	.....	.....	.....	6,486
Druggists' sundries	.....	640	.....	23
Other rubber manufactures	.....	2,016	.....	2,151
Totals	4,616	$16,297	13,565	$111,502
Insulated wire	.....	$3,653	.....	.....
Fountain pens	12	20	.....	.....
Suspenders	.....	995	.....	2,230
Chewing gum	.....	4,468	.....	3,832
UNMANUFACTURED:				
Reclaimed rubber	270	180	.....	.....

PORT OF SEATTLE.

IMPORTS.

	April. 1919. Pounds.	1919. Value.	1920. Pounds.	1920. Value.
UNMANUFACTURED—*free:*				
Crude rubber:				
From Canada	.....	.....	4,811	$1,664
China	127,050	$63,525	.....	.....
Straits Settlements	10,567,209	4,269,697	665,640	366,695
British East Indies	446,410	169,738	11,200	3,085
Dutch East Indies	.....	.....	4,336	2,046
Japan	162,578	76,475	.....	.....
Totals	11,303,247	$4,579,435	685,987	$373,490
Jelutong	158,218	$15,806	.....	.....
Rubber scrap	10,172	383	34,000	$2,040
Rubber manufactures	.....	9	.....	.....
EXPORTS.				
MANUFACTURED:				
Automobile tires	.....	$5,007	.....	$14,290
Inner tubes	.....		.....	2,229
Solid tires	.....		.....	5,281
All other tires	.....	793	.....	4
Belting	.....	16,283	.....	1,065
Hose	.....		.....	200
Packing	.....		.....	403
Rubber boots	789	3,588	84	354
Rubber shoes	1,022	628	208	260
Druggists' sundries	.....	1,768	.....	1,938
Other rubber manufactures	.....	10,732	.....	1,674
Totals	1,811	$38,799	292	$27,698
Insulated wire	.....	$146	.....	$9
Fountain pens	54	131	144	12
Suspenders	.....	978	.....	1,343
UNMANUFACTURED:				
Reclaimed rubber	.....	.....	90,695	3,967

PORT OF SAN FRANCISCO.

IMPORTS.

	April. 1919. Pounds.	1919. Value.	1920. Pounds.	1920. Value.
UNMANUFACTURED—*free:*				
Crude rubber:				
From Straits Settlements..	9,652,116	$3,399,427	1,002,681	$522,138
British East Indies.	78,425	32,305	.....	.....
Dutch East Indies.	2,252,324	817,551	341,442	110,033
Hong Kong	280,438	84,131	600	200
Totals	12,263,303	$4,333,414	1,344,723	$632,371
Jelutong	168,468	$7,125	.....	.....
Gutta percha	57,324	11,615	.....	.....
Chicle	62,609	69,036	.....	.....
Rubber manufactures	.....	22	.....	$19
EXPORTS.				
MANUFACTURED:				
Automobile tires	.....	$380,419	.....	$348,614
Inner tubes	.....	.....	.....	32,554
Solid tires	.....	.....	.....	23,520
All other tires.....	.....	13,052	.....	9,141
Belting	.....	64,508	.....	45,602
Hose	.....	.....	.....	9,771
Packing	.....	.....	.....	11,999
Rubber boots	157	507	1,086	4,913
Rubber shoes	11,710	11,207	5,584	6,066
Druggists' sundries	.....	28,089	.....	4,164
Other rubber manufactures.	.....	63,815	.....	21,048
Totals	11,867	$561,597	6,670	$517,492
Insulated wire	.....	$82,527	.....	$5,664
Fountain pens	154	204	339	582
Suspenders	.....	11,293	.....	1,537
Chewing gum	.....	5,521	.....	1,923
UNMANUFACTURED—*free*				
Reclaimed and scrap rubber.	18,340	$1,125	238,112	$12,192
REEXPORTS.				
Crude rubber	.....	.....	298	$63
Chicle	.....	.....	43,367	44,196
Rubber manufactures	.....	$1	.....	.....

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

THE SITUATION in the rubber scrap market is described as easier. Tires and shoes are lower than last month. The market changes but slightly from week to week. The activity is not up to normal and the outlook is problematical. Prices quoted are nominal.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.

JUNE 25, 1920.

Prices subject to change without notice.

BOOTS AND SHOES:			
Arctic tops	lb.	$0.01 @	
Boots and shoes	lb.	.07 @	.07¼
Trimmed arctics	lb.	.05¾ @	.06
Untrimmed arctics	lb.	.04¾ @	.05
HARD RUBBER:			
Battery jars, black compound	lb.	.01 @	.01¼
No. 1, bright fracture	lb.	.23 @	.24
INNER TUBES:			
No. 1	lb.	.15½ @	.16
Compounded	lb.	.09½ @	.09¾
Red	lb.	.08 @	.08½
MECHANICALS:			
Black scrap, mixed, No. 1	lb.	.03½ @	.04
No. 2	lb.	.02½ @	.02¾
Car springs	lb.	.03½ @	.04
Heels	lb.	.03 @	.03½
Horse-shoe pads	lb.	.03 @	.03½
Hose, air brake	lb.	.03¼ @	.03¾
fire, cotton lined	lb.	.01½ @	.01¾
garden	lb.	.01½ @	.01¾
Insulated wire stripping, free from fiber	lb.	.03½ @	.04
Matting	lb.	.01¼ @	.01½
Red packing	lb.	.05½ @	.06
Red scrap, No. 1	lb.	.09 @	.10
No. 2	lb.	.06¾ @	.07¼
White scrap No. 2	lb.	.08 @	.09
No. 1	lb.	.10 @	.11
TIRES:			
PNEUMATIC—			
Auto peelings	lb.	.04¼ @	.04½
Bicycle	lb.	.02¼ @	.03
Standard white auto	lb.	.04¼ @	.04¾
Standard auto	lb.	.03 @	.03¼
Stripped, unguaranteed	lb.	.02¼ @	.02½
White, G. & G., M. & W., and U. S.	lb.	.04¾ @	.05
SOLID—			
Carriage	lb.	.04 @	.04½
Irony	lb.	.01 @	
Truck	lb.	.03½ @	.03¾

THE MARKET FOR COTTON AND OTHER FABRICS.

NEW YORK.

AMERICAN COTTON. The market has been quiet and steady with little business done. Middling uplands stayed at 40 cents till the middle of the month, then declined slightly and gradually until it reached 38.25 cents at the time of going to press. Tight money and the raising of the rate of interest by the Federal Reserve Board, have contributed to this result. Reports on the new crop are conflicting as so much depends on the weather, owing to the lateness in planting on account of the hard winter. In some districts planters have turned to farm produce instead of cotton, because of the boll weevil and the high prices of vegetables; in others they are planting more cotton than before. It is too early to speculate on the amount of the new crop. Meanwhile conditions in England point to a diminution, if not a complete cessation, of imports of cotton from the United States.

SEA ISLAND COTTON. There is no change in the situation regarding Sea Island Cotton, and no signs of a cessation of the ravages of insect pests. Many planters have given up cotton for the time being or have cut down their acreage, as Sea Island cotton seems to have abdicated in favor of Arizona.

EGYPTIAN COTTON. Reports here are also conflicting. While information has been given out that a larger acreage than ever has been planted with cotton, owing to the high prices and the speculation of last season, equally positive is the assertion that the Government has insisted that a large proportion of the cotton land, two-thirds, should be planted with food stuffs.

ARIZONA COTTON. Every available foot of ground has been utilized and a record crop is anticipated, perhaps three times the 42,734 bales of last year. All of the crop has been contracted for by fabric manufacturers.

COTTON FABRICS. The difficulties in meeting the demands for tire fabrics have been relieved, partly by the congestion of transportation, which, by holding up steel, rubber and other raw materials, has forcibly reduced the manufacture of automobiles and of tires, and partly by desire to substitute cord tires for those made of square woven fabrics and the consequent cessation of the call for the latter. There is a great confusion about contracts, on this account and reluctance to give out quotations or terms of settlement.

The market for hose and belting fabrics is strong but the offerings are restricted. There is a rush to cancel contracts in drills, sheetings and osnaburgs, and the sales of piece goods at the mills have fallen sharply; the manufacturers, however, see no prospect of reducing prices.

NEW YORK QUOTATIONS.

JUNE 25, 1920.

Prices subject to change without notice.

ASBESTOS CLOTH:			
Brake lining, 2½ lbs. sq. yd., brass or copper insertion	lb.	$1.00 @	1.10
2¼ lbs. sq. yd., brass or copper insertion	lb.	1.10 @	1.15
BURLAPS:			
32—7-ounce	100 yards	@	
32—8-ounce		@	
40—7½-ounce		8.25 @	
40—8-ounce		8.50 @	
40—10-ounce		11.00 @	
40—10½-ounce		11.50 @	
45—7½-ounce		@	
45—8-ounce		@	
48—10-ounce		@	
DRILLS:			
38-inch 2.00-yard	yard	.47½ @	
40-inch 2.47-yard		.39¼ @	
52-inch 1.90-yard		.60½ @	
52-inch 1.95-yard		.59¼ @	
60-inch 1.52-yard		.86 @	

DUCK:			
CARRIAGE CLOTH:			
38-inch 2.00-yard enameling duck	yard	$0.48	@
38-inch 1.74-yard		.56¼	@
72-inch 16.66-ounce		1.30	@
72-inch 17.21-ounce		1.40	@
MECHANICAL:			
Hose	pound	.82	@
Belting		.82	@
HOLLANDS, 40-INCH:			
Acme	yard		@
Endurance			@
Penn			@
OSNABURGS:			
40-inch 2.35-yard	yard		@
40-inch 2.48-yard			@
37½-inch 2.42-yard			@
RAINCOAT FABRICS:			
COTTON:			
Bombazine 64 x 60	yard	.30	@
60 x 48		.27	@
Cashmeres, cotton and wool, 36-inch, tan		1.00	@
Twills 64 x 72		.46	@
64 x 102		.48	@
Twill, mercerized, 36-inch, blue and black		.60	@
tan and olive		.57½	@
Tweed		.80	@ 1.40
printed		.27½	@
Plaids 60 x 48		.28	@
56 x 44		.27	@
Repp		.40	@ .45
Prints 60 x 48		.29	@
64 x 60		.32	@
IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING—PLAIN AND FANCIES:			
63-inch, 3¼ to 7½ ounces	yard	1.45	@ 3.90
36-inch, 2¾ to 5 ounces		.85	@ 2.25
IMPORTED PLAID LINING (UNION AND COTTON):			
63-inch, 2 to 4 ounces	yard	.95	@ 1.90
36-inch, 2 to 4 ounces		.60	@ 1.15
DOMESTIC WORSTED FABRICS:			
36-inch, 4½ to 8 ounces	yard	$0.85	@ 1.90
DOMESTIC WOVEN AND PLAID LININGS (COTTON):			
36-inch, 3¼ to 5 ounces		.27	@ .35
SHEETINGS, 40-INCH:			
48 x 48, 2.35-yard	yard	.32	@
48 x 48, 2.50-yard		.30	@
48 x 48, 2.70-yard			@
48 x 48, 2.85-yard		.28	@
64 x 68, 3.15-yard		.31	@
56 x 60, 3.60-yard		.28	@
48 x 44, 3.75-yard		.25½	@
SILKS:			
Canton, 38-inch	yard	.67½	@
Schappe, 36-inch		.90	@
STOCKINETTES:			
SINGLE THREAD:			
3½ Peeler, carded	pound		@
4½ Peeler, carded		1.15	@ 1.15¼
6½ Peeler, combed		1.80	@
DOUBLE THREAD:			
Zero Peeler, carded	pound	.98	@ .98½
3½ Feeler, carded		1.04	@ 1.04½
6½ Peeler, combed		2.70¼	@ 2.70½
TIRE FABRICS:			
BUILDING:			
17¼-ounce Sakellarides, combed	pound	2.50	@ 3.00
17¼-ounce Egyptian, combed		2.30	@ 2.55
17¼-ounce Egyptian, carded		2.20	@ 2.45
17¼-ounce Peelers, combed		2.20	@ 2.50
17¼-ounce Peelers, carded		1.40	@ 1.55
CORD:			
15-ounce Egyptian	pound	2.75	@ 2.80
BICYCLE:			
8-ounce American	pound	1.80	@ 2.00
10-ounce American		1.70	@ 1.80
CHAFER:			
9¼-ounce Sea Island	pound	2.70	@
9¼-ounce Egyptian, carded		2.50	@ 2.69
9¼-ounce Peeler, carded		1.79	@ 2.00

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

THE generally congested freight conditions still continue to hamper the distribution of stocks in all lines. Producers are endeavoring to keep their regular customers supplied, but are not seeking new business which would be only adding to their present difficulties. Prices generally have remained firm and unchanged with tendency to advance.

ANILINE OIL. The demand has been steady. Prices firm. Spot early in the month was 34 cents per pound.

BARYTES. Shipping facilities for miners of barytes showed slight improvement a few weeks ago, much to their encouragement. Attention is concentrated on back orders and quotations on future business are not being made.

BENZOL. Production continues far behind deliveries. Spot stocks are around 28 cents a gallon for the 90 per cent grade.

BLACKS. Business in blacks is maintained at an active and steady demand. Manufacturers of carbon black are harassed by legislation which has caused removal of plants to sections of the country far from the field of consumers, and, by the utilization of poorer qualities of natural gas. The demand from rubber manufacturers grows steadily and has reached very large proportions. The outlook certainly does not indicate any lowering in price in the near future.

TIRE
FABRICS

JENCKES
SPINNING
COMPANY

PAWTUCKET
RHODE ISLAND

AKRON OFFICE
407 Peoples Savings & Trust
Co. Building.

CARBON BISULPHIDE. The demand is good with spot prices varying from 7¼ to 8 cents.

CARBON TETRACHLORIDE. This material is in good demand and the price holds rather firm and steady.

DRY COLORS. Throughout the past month trade and prices have continued strong.

LITHARGE. Demand on all lead and zinc products far exceed the supply which in the Eastern section of the United States has been practically depleted, owing to inability of the railroads to move shipments from the Western producers.

LITHOPONE. Many manufacturers are actively engaged in preparing for an increase of production due to the excessive demand. The producers are endeavoring to supply old customers but with indifferent success, owing to the railroad situation. The price remains nominally unchanged at 8 cents.

SUBLIMED LEAD. The same conditions of overdemand and short supply prevail in all lead products. Sublimed lead is under the same influences that affect litharge.

SULPHUR. The market situation of sulphur remained practically unchanged during the month, both as to price and steady demand.

WHITING. Chalk has been arriving in slightly increased amount but the whiting supply is exceedingly short and prices firm.

ZINC OXIDE. Producers of zinc oxide and lithopone are in a similar position as to output. They are planning to increase production and are not looking for new business. New domestic companies for the manufacture of zinc oxide are reported to be forming and very little zinc oxide of foreign make is coming in. As regards quality the foreign-made goods are fully matched by the domestic.

NEW YORK QUOTATIONS.

JUNE 25, 1920.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.				
Accelerene, New York	lb.	$4.75	@	
Accelemal	lb.	.55	@	.57½
Aldehyde ammonia crystals	lb.	2.25	@	2.50
Aniline oil	lb.	.35	@	
Excellerex	lb.	.65	@	.75
Hexamethylene tetramine (powdered)	lb.	2.50	@	3.50
N. C. C.	lb.	.50	@	
No. 999	lb.	.21	@	
Paraphenylenediamine	lb.	2.70	@	2.85
Thiocarbanilide	lb.	.55	@	.70
Velosan	lb.	3.70	@	3.85
Vul-Ko-Cene	lb.	.35	@	
ACCELERATORS, INORGANIC.				
Lead, dry red (bbls.)	lb.	.12¼	@	
sublimed blue (bbls.)	lb.	.10	@	
sublimed white (bbls.)	lb.	.10	@	
white, basic carbonate (bbls.)	lb.	.10½	@	
Lime, flour	lb.	.02	@	.02½
Litharge, domestic	lb.	.11¼	@	.13¾
sublimed	lb.	.12	@	
imported	lb.			
Magnesium, carbonate, light technical	lb.	.11½	@	.14
calcined extra light	lb.	.60	@	
calcined light	lb.	.35	@	
calcined medium light	lb.	.30	@	
calcined heavy	lb.	.07½	@	.08
calcined commercial (magnesite)	lb.	.04	@	0.05
oxide, extra light	lb.	.65	@	.67
oxide, imported	lb.	.55	@	
ACIDS.				
Acetic, 28 per cent (bbls.)	cwt.	3.75	@	4.50
glacial, 99 per cent (carboys)	cwt.	15.95	@	16.70
Cresylic (97% straw color) (drums)	gal.	1.20	@	1.30
(95% dark) (drums)	gal.	1.10	@	1.20
Muriatic, 20 degrees	cwt.	2.25	@	2.50
Nitric, 36 degrees	cwt.	6.50	@	7.00
Sulphuric, 66 degrees	ton	20.00	@	
ALKALIES.				
Caustic soda, 76 per cent (bbls.)	lb.	.06¼	@	.07½
Soda ash (bbls.)	lb.	.05	@	

COLORS.				
Black:				
Bone, powdered	lb.	$0.06	@	
granulated	lb.	.11	@	
Carbon black (sacks, factory)	lb.	.15	@	.30
Drop	lb.	.05½	@	.15
Ivory black	lb.	.16	@	.30
Lampblack	lb.	.15	@	.45
Oil soluble aniline	lb.	1.00	@	
Rubber black	lb.	.09½	@	
Blue:				
Cobalt	lb.	.25	@	.35
Prussian	lb.	1.00	@	
Ultramarine	lb.	.18	@	.50
Rubber makers' blue	lb.	3.50	@	
Brown:				
Iron oxide	lb.	.04¾	@	.06¾
Sienna, Italian, raw and burnt	lb.	.06	@	.14
Umber, Turkey, raw and burnt	lb.	.05½	@	.09
Vandyke	lb.	.02½	@	.10
Green:				
Chrome, light	lb.	.42	@	.70
medium	lb.	.42	@	.70
dark	lb.	.50	@	.70
commercial	lb.	.07	@	.15
Oxide I. R.	lb.	.70	@	
Oxide of chromium (casks)	lb.	1.25	@	
Rubber makers' green	lb.	3.50	@	
Red:				
Antimony, crimson, sulphuret of (casks)	lb.	.45	@	
crimson, "Mephisto" (casks)	lb.	.60	@	
crimson, "R. M. P."	lb.	.65	@	
Antimony, golden sulphuret of (casks)	lb.	.20	@	.22
golden sulphuret (States)	lb.	.35	@	.40
golden, "Mephisto" (casks)	lb.	.33	@	
golden, "R. M. P."	lb.	.33	@	
red sulphuret (States)	lb.	.25	@	.30
vermilion sulphuret	lb.	.55	@	
Arsenic, red sulphide	lb.	.18	@	
Indian	lb.	.14	@	.16
Para toner	lb.	2.25	@	
Red excelsior	lb.	.19	@	.22
Toluidine toner	lb.	4.25	@	
Iron oxide, reduced grades	lb.	.05	@	.14
pure bright	lb.	.15	@	.17
Spanish bright	lb.	.05	@	.06
Venetian	lb.	.02½	@	.07
Oil soluble aniline, red	lb.	1.50	@	2.00
orange	lb.	1.75	@	
Oximony	lb.	.18	@	
Vermilion, American	lb.	.25	@	.30
artificial	lb.	.37	@	
English quicksilver	lb.	1.70	@	1.75
Rubber makers' red	lb.	1.35	@	4.00
purple	lb.	2.50	@	
White:				
Aluminum bronze, C. P	lb.	.65	@	
superior	lb.	.75	@	
Lithopone, domestic	lb.	.07¾	@	.08¼
Ponolith (carloads, factory)	lb.		@	
Rubber-makers' white	lb.	.11¼	@	
Zinc oxide, Horsehead (carload, factory):				
"XX red"	lb.	.10	@	.10½
"Special"	lb.	.10½	@	.11
French process, red seal	lb.	.11¼	@	.11¾
green seal	lb.	.12¼	@	.12¾
white seal	lb.	.13½	@	.13¾
(States)	lb.		@	
Azo (carload, factory):				
ZZZ, lead free	lb.	.10	@	.10¼
ZZ, under 5% leaded	lb.	.09	@	.09¼
Z, 8-10% leaded	lb.	.08¼	@	.08½
Yellow:				
Cadmium, sulphide, yellow, light, orange	lb.	1.50	@	1.65
red	lb.	1.85	@	
Chrome, light and medium	lb.	.35	@	
Ochre, domestic	lb.	.02½	@	.06
imported	lb.	.04¼	@	.08½
Oil, soluble aniline	lb.	1.50	@	
Rubber makers' yellow	lb.	1.50	@	2.50
Zinc chromate	lb.	.55	@	
COMPOUNDING INGREDIENTS.				
Aluminum flake (carload)	ton	30.00	@	
silicate	ton	30.00	@	35.00
Ammonia carbonate, powdered	lb.	.17¼	@	
Asbestine (carloads)	ton	30.00	@	
Barium, carbonate, precipitated	ton	100.00	@	
sulphide, precipitated	lb.	.05	@	
dust	ton	100.00	@	

Barytes, pure white (f. o. b. works)	ton	$27.50	@	
off color	ton	22.00	@	
uniform floated	ton	27.50	@	
Basofor	lb.	.06	@	
Blanc fixe	lb.	.05½	@	
Bone ash	lb.	.10	@	
Carrara filler	lb.	.02	@	
Chalk, precipitated, extra light	lb.	.03	@	.05½
heavy	lb.	.04	@	.04½
China clay, Dixie Blue Ridge	ton	20.00	@	
domestic	ton	9.00	@	20.00
imported	ton	19.00	@	24.00
Shawnee	ton	20.00	@	
Cotton linters, clean mill run, f. o. b. factory	lb.	.03	@	.03½
Fossil flour (powdered)	lb.	.03½	@	
(bolted)	lb.	.04	@	
Diatomite	lb.	.03	@	.04
Glue, high grade	lb.	.35	@	.45
medium	lb.	.30	@	.35
low grade	lb.	.20	@	.25
Graphite, flake (400-pound bbl.)	lb.	.10	@	.30
amorphous	lb.	.04	@	.08
Ground glass FF. (bbls.)	lb.	.03	@	
Infusorial earth (powdered)	lb.	.03½	@	
(bolted)	lb.	.04	@	
Liquid rubber	lb.	.18	@	
Mica, powdered	lb.	.15½	@	
Pumice stone, powdered (bbl.)	lb.	.05	@	.10
Rotten stone, powdered	lb.	.02½	@	.04½
Rubber paste	lb.	.19	@	.22
Rub-R-Glu	lb.		@	
Silex (silica)	ton	25.00	@	40.00
Soapstone, powdered gray (carload)	ton	25.00	@	
Starch, powdered corn (carload, bbls.)	cwt.	6.09	@	
(carload, bags)	cwt.	5.62	@	
Talc, powdered soapstone	ton	20.00	@	
Terra blanche	ton	22.00	@	32.00
Tripoli earth, air-floated, cream or rose	ton	50.00	@	
white	ton	52.50	@	
Tyre-lith	ton	110.00	@	
Whiting, Alba (carloads)	cwt.	1.00	@	
Columbia	cwt.	.80	@	
commercial	cwt.	1.40	@	
English cliffstone	cwt.	2.00	@	
gilders	cwt.	1.45	@	1.55
Paris, white, American	cwt.	1.75	@	
Quaker	ton	16.00	@	
Super	ton	30.00	@	32.50
Wood pulp, imported	lb.	.03¼	@	
XXX	ton	75.00	@	
X	ton	65.00	@	
Wood flour, American	ton	50.00	@	

MINERAL RUBBER.

Elateron (carloads)	ton	60.00	@	
(less carloads)	ton	63.00	@	
Gilsonite	lb.	.03¼	@	
Genasco (carloads, factory)	ton	62.50	@	
(less carloads, factory)	ton	64.50	@	
Hard hydrocarbon	ton	35.00	@	40.00
K-X	ton		@	
K. M. R.	ton		@	
M. R. X.	ton			
Pioneer, carload, factory	ton	60.00	@	
less carload, factory	ton	65.00	@	
Raven M. R.	ton	50.00	@	70.00
Refined Elaterite	ton		@	
Richmond	ton	75.00	@	
No. 64	ton	44.00	@	
318/320 M. P. hydrocarbon	ton	50.00	@	60.00
Robertson, M. R. Special (carloads, factory)	ton	82.50	@	85.00
M. R. (carloads, factory)	ton	60.00	@	
M. R. (less car loads factory)	ton	60.50	@	
Rubrax	ton	60.00	@	
Synpro, granulated	ton	85.00	@	
Walpole rubber flux (factory)	lb.	.05	@	

OILS.

Avoilas compound	lb.	.16	@	.18
Castor, No. 1, U. S. P.	lb.	.20	@	
No. 3, U. S. P.	lb.	.19	@	
Corn	lb.	.18	@	
Corn, refined Argo	cwt.	20.06	@	
Cotton	lb.	.17	@	
Glycerine (98 per cent)	lb.	.23½	@	.24
Linseed, raw (carloads)	gal.	1.67	@	
Linseed compound	gal.	.85	@	
Palmoline	lb.	.14	@	.15
Palm (Lagos)	lb.	.13	@	.18
Peanut	lb.	.20	@	
Petrolatum	lb.	.10	@	
Petroleum grease	lb.	.07½	@	.09
Pine, steam distilled	gal.	1.90	@	2.00
Rapeseed, refined	lb.	.22	@	
blown	lb.	.22	@	
Rosin	gal.	.65	@	1.05
Synpro	gal.	.90	@	
Soya bean	lb.	.18	@	
Tar	gal.	.42	@	

RESINS AND PITCHES.

Balsam, fir	gal.	$1.75	@	1.80
Cantella gum	lb.	.55	@	
Cumar resin, hard	lb.	.12	@	.16
soft	lb.	.09	@	.13
Tar, retort	bbl.	15.00	@	15.50
kiln	bbl.	14.75	@	15.00
Pitch, Burgundy	lb.	.11	@	
coal tar	lb.	.01½	@	
pine tar	lb.	.04	@	
ponto	lb.	.14	@	
Rosin	bbl.	16.95	@	21.75
granulated	lb.		None	
fused			None	
Rosin, K	bbl.	19.25	@	
strained	bbl.	20.00	@	
Shellac, fine orange	lb.	1.15	@	

SOLVENTS.

Acetone (98.99 per cent drums)	lb.	.26	@	
methyl (drums)	gal.	1.50	@	
Benzol, water white	gal.	.28	@	.33½
Beta-naphthol	lb.	.90	@	
Carbon bisulphide (drums)	lb.	.07½	@	.08¾
tetrachloride (drums)	lb.	.12¼	@	.14¼
Naphtha, motor gasoline (steel bbls.)	gal.	.32	@	
73 @ 76 degrees (steel bbls.)	gal.	.40	@	
70 @ 72 (steel bbls.)	gal.	.38	@	
68 @ 70 degrees (steel bbls.)	gal.	.37	@	
V. M. & P. (steel bbls.)	gal.	.29	@	
Toluol, pure	gal.	.31	@	.36½
Turpentine, spirits	gal.	1.80	@	
wood	gal.	1.78	@	
Osmaco reducer	gal.	.65	@	
Xylol, pure	gal.	.35	@	.45
commercial	gal.	.35	@	.40

SUBSTITUTES.

Black	lb.	.10	@	.22
White	lb.	.11	@	.24
Brown	lb.	.15	@	.23
Brown factice	lb.	.11	@	.23
White factice	lb.	.12½	@	.24½
Paragol, soft and medium (carloads)	cwt.	18.58	@	
hard	cwt.	18.08	@	

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo)	lb.	.39	@	
Orange mineral, domestic	lb.	.15¼	@	
Sulphur chloride (jugs)	lb.	.20	@	
(drums)	lb.	.07½	@	
Sulphur, flour, Brooklyn brand (carloads)	cwt.	3.40	@	
Bergenport brand (carloads)	cwt.	3.65	@	
superfine (carloads, factory)	cwt.	2.00	@	2.25

(See also Colors—Antimony.)

WAXES.

Wax, beeswax, white	lb.	.68	@	
ceresin, white	lb.	.16	@	.20
carnauba	lb.	.45	@	
ozokerite, black	lb.	.60	@	
green	lb.	.60	@	
Montan	lb.	.25	@	
paraffine, refined 118/120 m. p. (cases)	lb.	.12	@	
123/125 m. p. (cases)	lb.	.12½	@	
128/130 m. p. (cases)	lb.	.14	@	
Sweet wax	lb.	.14	@	

UNITED STATES PRODUCTION OF ZINC PIGMENTS, 1852-1919.

Year.	Zinc Oxide. Tons.	Zinc Oxide. Value.	Zinc-Lead and Leaded Zinc Oxide. Tons.	Zinc-Lead and Leaded Zinc Oxide. Value.	Lithopone. Tons.	Lithopone. Value.
1852-1879	170,000	$12,000,000	.....	.....	.....	.....
1880-1889	143,077	10,801,338	.....	.....	.....	.....
1890-1899	254,102	18,724,890	.....	.....	.....	.....
1900-1909	614,728	50,260,199	.....	.....	.....	.....
1901-1909	.....	.....	61,283	$4,882,206	.....	.....
1906-1909	.....	.....	.....	.....	37,714	$2,806,614
1910	58,481	5,238,945	6,823	621,120	12,655	916,512
1911	63,827	5,816,370	6,765	561,560	16,866	1,243,108
1912	84,002	7,482,409	11,410	953,800	24,220	1,702,119
1913	75,700	7,161,528	9,421	745,698	29,685	2,170,445
1914	82,809	7,850,350	11,317	977,431	32,819	2,490,530
1915	109,261	11,984,470	18,758	1,724,145	46,494	3,760,472
1916	100,339	18,816,378	23,003	3,053,060	51,291	5,798,927
1917	107,586	21,589,976	23,450	3,728,976	63,713	7,406,896
1918	100,286	20,560,247	26,714	4,480,565	62,403	7,923,276
1919	117,639	20,591,877	27,591	4,009,024	80,989	10,266,230
Totals	2,081,837	$218,878,977	226,535	$25,737,585	458,849	$46,485,129

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